SCIENCE AND INDUSTR

Manufacturers Record

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IT IS HAPPENING HERE

REFERENCE
DO NOT LOAN

The evidence shows crystal clear the purpose to herd us as creatures of a state with man rule supplanting the rule of law.

Courts have been derided and troops used to prevent men from working.

A labor union aiming to strangle industry, proclaims the approval of the President of the United States, and the nation's chief magistrate fails to denounce the methods of John L. Lewis.

Is America to be mocked until liberty vanishes?

JULY, 1937

Careful Control Features Steel Making at Sparrows Point • The South Speeds Up Its Freight • Louisiana Recognizes Its Opportunities • Cellulose From Cotton • Southern Farm Land in Demand

Cover illustration—Observing conditions of slag, Bethlehem Steel Co's. furnace.

TERRACING FOR PROFIT

as simple as

A

ABANDONED FOR 15 YEARS! This once-profitable cotton land in Tallapoosa County, Alabama, was badly eroded and gullied—brought no income for 15 years!

B

BUILDING A PROFIT! This is the type of terracing equipment—a "Caterpillar" Diesel Tractor and Terracer—that filled in the gullies and constructed terraces on the abandoned land.

C

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WORLD'S LARGEST MANUFACTURER OF DIES
ENGINES, TRACK-TYPE TRACTORS AND TE RACE

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JULY 1937

Volume CVI No. 7

MANUFACTURERS RECORD

Devoted to the Upbuilding of the Nation Through the Development of the South and Southwest as the Nation's Greatest Material Asset

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Member A.B.C.

Railway Merchandise Piers, Warehouses and Yards, Port of Norfolk Va., See Article Page 31

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SIGNS OF THE TIMES

STRIKES which have spread throughout the country with attendant violence may well cause concern. A combination of circumstances has created a situation unlike any in the past.

The C. I. O. under the domination of John L. Lewis wants to do the bargaining for all labor, and besides wants signed agreements from employers when it is shown that its own organization does not keep agreements when they are signed. Steel men who have refused to sign a contract with the C. I. O. have made a fight for liberty of the individual and for private industry in the face of terrific pressure.

Why should they sign a contract with the C. I. O.? The law does not require it, and the President of General Motors says there have been more than 200 shut downs in 48 of the corporation's plants since General Motors signed, and he calls attention to what the agreement provides: "Should any difference arise over grievances there shall be no suspension or stoppages of work until every effort has been exhausted to adjust them through the regular grievance procedure." He adds: "In numerous instances strikes have been called before any complaints were presented."

The situation has been made worse by the apparent purpose of the administration to develop class hatred. It has pilloried business as being managed by crooks, while it takes care of strikers who won't work and won't let others work. Governor Davey of Ohio is on record in a public statement to the effect that Secretary of Labor Perkins asked him virtually to kidnap representatives of the steel companies and hold them until they signed an agreement.

Men's minds already confused are fearful of the future when the orders of courts are flouted by strikers, and the Secretary of Labor cannot decide that taking forceful possession of a man's property is trespassing.

The situation is complicated by the knowledge that the wellbeing of the country has been voted into the hands of one who would remake the American form of government. A substantial number in Congress are objecting, and that is encouraging, but will they stand firm? Congress was brought by the power of persuasion or patronage to the point of giving over its constitutional prerogative of controlling appropriations. It voted billions without knowing how the money was to be spent. They were voted without let or hindrance to one who would pack the Supreme Court for his own ends and accept a rebuke in his high office from a labor leader whose organization contributed to his political campaign.

If those in Congress who have stood firm in their opposition to the court packing scheme would turn their attention now, vigorously and unfalteringly, to other vital needs that mean so much to the country, they could be effective in bringing about a better situation than now exists, and we are glad to recognize the signs that they are on the move in that direction.

History will record an amazing list of attempts to create a government of centralized control. "The more abundant life" and "free social cooperation" hooey has evolved weird schemes of many kinds that have cost billions. Wage earners with numbers—27,000,000 of them; incalculable sums for "Social Security" to be left in the hands of future politicians. Gardens of Eden such as at Beltsville, Maryland, first to cost $5,000,000, and now $12,000,000 according to the Baltimore *Sun*, with an additional subsidy likely because occupants won't be able to pay the rents demanded. Seven T. V. A.'s. The one-sided unfair Wagner law that has been promptly shown up as unworkable. The proposed minimum wage and hour bill, which does not attempt to meet the problems it raises, but turns them over to a Board with power over every kind of industry amounting to almost the power of life and death. The Mobile Chamber of Commerce, writing the MANUFACTURERS RECORD, has this to say about it:

"The business leaders of Mobile feel that the Black-Connery bill if passed by the Federal Congress would work to the very serious disadvantage of Southern industry.

"We feel that it would be practically impossible for a central board in Washington to fairly and wisely set up scales of wages and hours of working which would be applicable in different sections of the country.

"It is felt that if this measure should become law, it would not only seriously hamper present operations in the South, but would react very unfavorably against

the industrial development which is taking place in the South.

"It is sincerely hoped that this dangerous proposal can be stopped."

There has been a long parade of follies. Has it been solely for a Utopian objective, or because of a deeper, more unworthy motive?

When there is a moment of sanity and the suggestion is ventured that there should be a reduction in the money spent for "this business of relief," governors and mayors rush from all quarters in violent protest, and another billion and a half is blithely voted. So the idea has spread beyond Washington that money grows on trees. The taxpayer, however, as he sweats, knows it is not so.

Fortunately for the country, the unmistakable sound of his voice is becoming louder and more insistent.

SPREADING GOVERNMENT COMPETITION

THE President's proposal to control droughts and floods in various parts of the country through Regional Authorities similar to the TVA, has further expression in a bill introduced by Senator Norris, which does not confine itself to the objectives here mentioned, but asks that each Authority provide municipalities and farmers the widest possible distribution of the current it generates.

It would thus seem that instead of a national program carried out solely on the basis of relieving sections which suffer from acts of nature, the Government is to enlarge its operations in the field of private business to the detriment of tens of thousands of shareholders who have invested their savings in the electric power industry.

The scheme had best be abandoned.

There are other ways to relieve distressed sections besides setting up so-called Authorities to sell electricity. The notable example we have in the TVA has by no means proven its economic right to live. It is presumable that these other Authorities will keep the same kind of books, have a bigger army of jobholders, and pay no more taxes than the Authority on the Tennessee River.

It is time to stop the encroachment of government in private fields. There never has been economy under political management, and it is a perversion of the function of government to use taxpayers' money for visionary enterprise with one definite result known in advance—injury to an industry whose service, taken as a whole, has been for the benefit of the people at constantly decreasing rates.

The functions of government have been perverted in many ways in recent years. The bill for fantastic schemes, costing many billions, will take many years to pay. The fact that most of them have been the wild dreams of theorists should bring a halt upon more madcap enterprises which are likely to produce a national debt of unbearable size. It is already far beyond anything known in the world heretofore.

REAPING THE WHIRLWIND OF CURTAILMENT

CLIMAXING the result of America's cotton restriction policy is the recent importation of 600 bales of staple cotton grown in Brazil for use in a South Carolina cotton mill, and it is reported that other American cotton manufacturers have purchased 4,000 bales more.

This Brazilian shipment is short staple cotton and it comes into this country duty free. It is not Egyptian or long staple cotton that is customarily bought in limited quantities from abroad. It is cotton similar in grade of fiber to that grown in South Carolina and other Southern states within sight of their cotton mills.

The world is consuming more foreign grown cotton than American cotton. American cotton exports have declined to 5,000,000 bales in recent years, with approximately half a million fewer bales shipped abroad this season than last year while foreign cotton continues to displace American cotton in foreign mills. Foreign cotton growing countries have been steadily increasing their cotton acreage and production. World cotton production in 1936-37 is estimated at 30,900,000 bales, with foreign production at 18,500,000 bales, both setting new high records.

While the initial quantity of imported Brazilian cotton is comparatively small the significance of its use is that the South, which has been facing increasing competition of foreign cotton in world markets, is now meeting for the first time competition of one-inch foreign staple in its own domestic market.

Such a condition is the result of the Government's drastic acreage curtailment policy which restricted the size of the South's cotton crop in order to raise the price. Proposed as an expedient to save the South's cotton industry at a critical time of the depression, it set in motion world forces of competition that point to a steadily declining export cotton industry so long as artificial price control is followed. Cotton is sold in a world market and the United States cannot control its price and distribution. History is strewn with the wreckage of artificial price maintenance and control schemes that ran head on into economic facts of supply and demand.

INCREASED COST OF DOING BUSINESS

WHOLESALE commodity prices in some lines are above 1929 figures. These increases were inevitable under the Administration's curtailment plan, wage and hour regulation, higher taxes and inflation measures, but in recent weeks another factor in increasing the cost of production has been the wave of strikes for which consumers must pay.

It is reported the automobile industry, because of losses due to strikes, increased wages and higher costs of materials, will raise prices about $50 a car for the 1938 models.

Upward moving prices in the building industry, in

furniture, in paper and in practically all commodities and wage rates advancing in all industries, have been the cause of recent dividend lapses by some companies, which, if earning a profit, realize the necessity of conserving working capital.

Raw materials are 85.6 per cent of the 1926 price average, semi-manufactures 86.8 per cent and finished products 87.6 per cent of the 1926 price average. In one year prices for raw materials have advanced 11 per cent, semi-manufactures prices 17 per cent and finished products prices 9 per cent.

Book paper prices have increased three times in recent months and newsprint is expected to go higher. Kraft or sulphate pulp and soda pulps have also advanced rapidly. A year ago bleached sulphite pulp was selling for about $50 a ton, and prices this year have been reported as high as $100 a ton.

The National Industrial Conference Board reports that labor cost per man hour is 17.7 per cent above the 1929 level. While output per man hour during the past year has increased slightly due to use of more mechanical equipment and improved methods of operation, labor cost per unit of product and labor cost per $100 of product have increased.

Business management, seeing raw materials and taxes advancing all along the line, must increase prices or jeopardize investment and employment.

1937 EDITION BLUE BOOK OF SOUTHERN PROGRESS

INDUSTRIAL development of the South in the past year and a half surpasses any previous record for a corresponding period in its history. This record of achievement is impressive not only in the establishment of large manufacturing plants but in the number and variety of small industrial enterprises.

Also, in 1936 and the first half of 1937, there has been a quickening of business activity that brought production in many branches of manufacturing, mining and agriculture up to and surpassing 1926-1929 figures.

These facts have been presented in the 1937 *Blue Book of Southern Progress*, distribution of which began last week.

Early press comments and reviews of the 1937 *Blue Book of Southern Progress* indicate the value of this annual publication to business men. In referring to this "annual of long-standing fame," under the heading, "The Best Editorial of the Year About the South," the Montgomery (Ala.) *Advertiser* cites the introductory article "as being about the best, at least the most stimulating, editorial, written about the South this year."

The Greenville (S. C.) *News* calls attention to the records and figures set forth in the *Blue Book of Southern Progress* "as clearly indicating the accelerated pace of Southern economic and industrial development."

The Columbus (Ga.) *Enquirer* says "it is replete with information of interest to the whole country and especially to investors as presenting an up-to-date picture of current Southern progress."

THREAT TO DOMESTIC SUGAR DEVELOPMENT

AS the MANUFACTURERS RECORD pointed out last month, the threat to sugar developments in the United States in pending legislation was not lessened by the reported Administration's unprecedented demand that unless American sugar interests cease their protective efforts, which are directed toward enlightening Congress as to the need for reducing foreign sugar quotas, no relief will be given.

The Journal of Commerce, in a recent editorial, explains why "the various interests in sugar, particularly those which do not feel that any Administration agency is concerned with their viewpoint, are so eager to have their point of view presented in Washington. Since this is a problem of great economic import, involving our most important import commodity and a major domestic industry, every effort should be made to present the pertinent facts to Congress, so that ill-considered action can be avoided. In a democracy, it is altogether proper that every citizen and every interested group cooperate in presenting to the legislature facts and figures to help guide legislation on technical subjects on which members of Congress cannot be expected to become qualified experts. It was highly unfortunate, therefore, that the President saw fit to invite representatives of important affected interests to leave the capital while sugar legislation is being drafted.

For the first time in 25 years, expansion of sugar factories in Louisiana has been under way and unless present foreign sugar quotas are eased, domestic sugar production will be curtailed and the new development in Louisiana, as well as activity in other sugar refining centers of the country throttled.

Congress is justified in limiting Cuba in general to sending her sugar here in raw form—to be refined here by American workmen. Present Puerto Rican and Hawaiian refined sugar quotas should in no event be increased, throwing American workmen out of their jobs, as pointed out by the United States Cane Sugar Refiners Association. This association is composed of members owning and operating refineries in Massachusetts, New York, New Jersey, Pennsylvania, Maryland, Georgia, Louisiana, Texas and California.

The question might be raised also as to why the Administration's approved foreign sugar quotas are so generous to foreign sugar growers when Louisiana, Florida and other sugar cane producing areas, and the beet sugar growers of the West, have been given so little consideration. Have not our Southern sugar cane and Western sugar beet farmers and workers, and all dependent on them for trade, some claims upon Congress in these times when the need is to develop business and employment opportunities in the United States? We regulate the South's cotton crop and play into the hands of foreign cotton growers and we give foreign sugar growers a competitive advantage over American sugar interests. Hardly consistent with any policy aiming to develop American resources and American industry.

CAREFUL CONTROL

FEATURES STEEL MAKING AT SPARROWS POINT

By

C. H. Herty, Jr.

Development and Research Department
Bethlehem Steel Company

CAREFUL control of the composition and the consistency of the slag has long been recognized as an important feature in basic open hearth steel making. Such control has now been brought to a high degree of perfection by the VisControl method recently developed by the research, metallurgical and open hearth staffs of Bethlehem Steel Company. Regardless of the variation in the components of the charge, the open hearth operator is now able to produce, consistently and with little extra effort, a steel that will meet specifications within comparatively narrow limits.

VisControl is now used in the regular basic open hearth furnaces at all Bethlehem steel producing plants, including the Maryland plant at Sparrows Point. When operating at capacity the 23 open hearth furnaces and three Bessemer converters at the latter plant turn out over 200,000 tons of steel a month, most of which is processed in the local manufacturing units. The principal products made at Sparrows Point are rails, sheared and universal plates and skelp, flanged and dished plate products, sheet bars and billets, tin plate and black plate, plain and galvanized sheets, wire rods, wire and wire products, butt and lap welded pipe. Bethlehem also has a large shipbuilding plant at Sparrows Point.

The Sparrows Point plant has always pioneered in the application of scientific methods of control to steel making. Every step in the operation, from ore to finished product, is supervised by a staff of 40 to 50 competent, well trained observers, equipped with the most modern instruments of control. Pyrometer control of open hearth furnaces, pouring pits, and rolling mills was introduced as early as 1918. Probably the first real effort of scientific slag control made in this country also originated at Sparrows Point, where systematic chemical control was inaugurated in 1928. As a result of these efforts corrective additions of acid materials were made to basic slags, an exceedingly important development in open hearth steel making. This method of control was based on chemical analyses of slag and metal and on the composition of the charge. It was later learned that certain physical properties of the slag could be used to good advantage in applying control methods. This dual control, chemical and physical, has now been attained through the VisControl procedure.

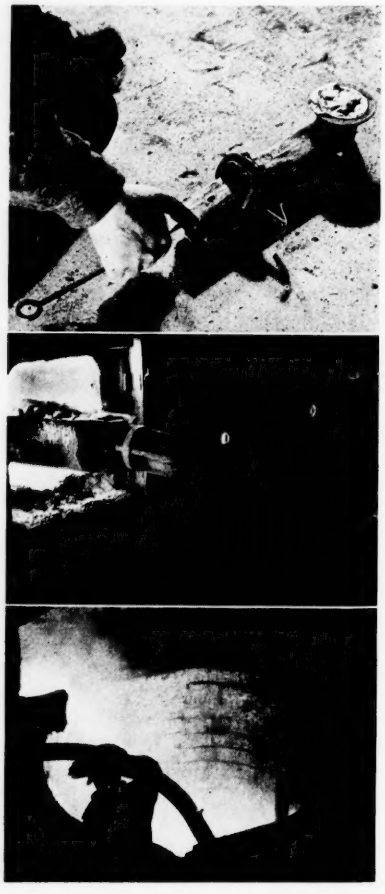
The slag which is formed in the open hearth furnace plays an important part in the purification of the steel. The charge, which is made up largely from pig iron and scrap steel, always contains carbon, manganese, silicon, phosphorus, and sulphur, generally in larger amounts than permitted in the finished steel. Through the oxidizing condition which prevails in the furnace these elements are partly removed. Carbon, when oxidized, escapes in the form of a gas, while the oxides of manganese, silicon and phosphorus float out of the metal and form a slag. A certain amount of the iron itself also oxidizes and goes into the slag. A strong base is required to hold the oxidized phosphorus in a stable condition in the slag and to prevent it from reverting back into the metal. To accomplish this it is necessary to add limestones or burnt lime to the charge.

The extent to which phosphorus is eliminated, a very important feature in steel making, depends on two main factors, the degree of oxidation, and the basicity of the slag; a strongly basic slag is also essential for the removal of sulphur from the metal bath. The basicity of the slag has furthermore a pronounced effect on the quantity and the action of the iron oxide in the slag. Generally speaking, a highly basic slag tends to give a high iron oxide content at the end of the heat, whereas a weakly basic slag is usually accompanied by a low iron oxide.

As the steel becomes covered with a layer of molten slag the opportunity for a direct reaction between the oxygen in the furnace gases and the impurities in the metal is greatly reduced. Fortunately, however, the iron oxide in the slag serves as a carrier for oxygen, giving up its oxygen content to the underlying bath, and being reoxidized by the furnace gases. The rate at which this transfer of oxygen takes place is greatly affected by the viscosity, or the fluidity, of the slag. With a thick, viscous slag the transfer of oxygen, as well as the interchange between other reacting components of the charge, must necessarily be slow.

From the foregoing it is easily seen that a proper relation between the basicity, the iron oxide content, and the viscosity of the slag is essential to efficient operation. The slag must be basic enough to give the proper elimination of phosphorus and sulphur, yet not so basic that the viscosity and the iron oxide content get out of line. Another important essential

Top—Measuring the fluidity of the slag.
Middle—Making an addition of lime.
Bottom—Tapping open hearth furnace.



is that the slag forming materials are added early in the heat, to insure their solution in the slag; corrective additions ofter the slag has begun to "shape up" do not have the same beneficial effect.

All these objectives are attained by VisControl. Extensive research has demonstrated that measurements of the slag viscosity and a few simple analyses early in the heat give sufficient information to permit a fairly accurate prediction of the composition of the final slag, at the end of the heat. It thus becomes possible to make the necessary additions early in the heat, when they are actually needed, rather than during the final hours, shortly before tapping.

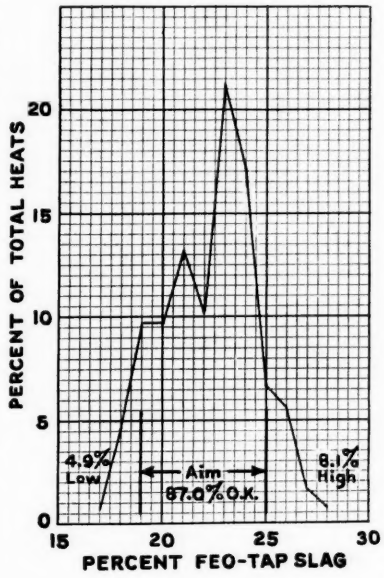
The instrument used for measuring the slag viscosity, as shown, consists of a rectangular steel block with a well at one end. A ¼ inch hole extends from this well to the end of the block, a distance of 10 inches. When liquid slag is poured into the well it flows into the hole. The distance which it flows is a qualitative measure of the fluidity of the slag. A heavy, viscous slag will flow a maximum of about 2 inches, a creamy slag 2 to 4 inches, and a thin slag 4 to 10 inches.

Briefly outlined the procedure of VisControl is as follows: Limestone is charged in various amounts according to an estimated silicon content of the charge. When the scrap is partly melted the hot metal is added; a short time thereafter the first helper takes a slag viscosity test. Half an hour later he takes another test, and with it a metal test. The two tests are sent to the laboratory and reported back before the heat melts. Viscosity tests are then continued at frequent intervals until the heat is melted. These tests and the metal and slag analyses are then referred to the proper schedule from which the basic or acid additions to be made are read. The additions are put into the furnace as quickly as possible, and the heat is then worked in the normal way by the first helper. Certain variations in making up and using the schedules are necessary at the various plants to take care of local conditions, but corrective additions later in the heat are not required save in exceptional cases.

In the lower ranges a maximum variation of 4 per cent is allowed in the FeO content of the slag. Rail, high carbon plate and forging grades are made with a slag containing 14 to 18 per cent FeO. As the FeO content increases a wider spread is permitted; medium carbon plates call for a 15 to 20 per cent FeO in the slag, sheet products of various kinds 19 to 25 per cent. How well the furnace operator is able to keep within these specified limits is illustrated in the graphical presentation of the percentage of FeO in tap slags made over a period of one month, producing rimmed steel with a maximum carbon content of 0.07 per cent. In 87 per cent of the cases the slag was within the specified limits.

As pointed out, an important function of VisControl is to maintain the lowest FeO content in the slag that will give a satisfactory removal of phosphorus and sulphur from the steel. This is of particular benefit in the subsequent deoxidation of the steel, because the amount of deoxidizer required increases with the iron

Distribution Chart Showing the Percentage of FeO in Tap Slags Over a Period of One Month, Producing a Rimmed Steel With 0.07% Maximum Carbon.



oxide content. It also minimizes the reoxidation of the steel by the slag, and makes it easy to maintain constant ladle conditions during the entire teeming period, so that the last ingots show little or no difference in analysis and physical properties from the first ingots of the heat. With a very fluid, highly oxidizing slag, on the other hand, it is often difficult to arrive at the proper carbon and manganese content, particularly with steels which are not dead killed in the furnace.

The oxidation condition of metal and slag has also a marked effect on the aluminum added in the ladle to give the proper grain size. Easily oxidized alloys, such as chromium, can also be added without excessive loss.

With a uniform slag oxidation from heat to heat it is thus possible to attain a good standardization of deoxidation practice, which inevitably results in an improved product. Many of the qualities in the present grades of steel are believed to be affected by oxidation and deoxidation, and greater uniformity in practice should facilitate the solution of many metallurgical problems which now are needlessly complicated due to wide variations in these two items.

The cleanliness of a steel is also greatly affected by the state of oxidation of the metal, prior to deoxidation. The lower the iron oxide content of the metal entering the ladle, the cleaner the finished steel.

From the foregoing it is easily seen that VisControl, properly carried out, insures a high degree of uniformity in steels made to the same specifications, not only in successive heats in one and the same furnace, but for every furnace, in every plant where this control is used, regardless of the composition of the charge and of any other local condition that may be encountered. An illustration of this remarkable uniformity in furnace conditions is furnished by the analysis of the slags from four different Bethlehem plants, operating on a low carbon rimmed steel. Although the raw materials to these plants varied widely, the average FeO content of the slags, over one year, was 22.7, 21.9, 21.9, and 21.6 per cent, respectively, a remarkably close agreement.

The physical properties of a steel could unquestionably be determined from a complete chemical analysis, if such an analysis were available. However, there are certain properties which cannot be fully predicted on the basis of the variations in the elements included in the standard analysis. As long as this situation exists, the question of uniformity becomes the more important. A steel made under the standard conditions of VisControl will respond more uniformly to heat treatment, drawing, forging, and machining. The manufacturer is thus able to adjust his fabricating methods to conditions which do not change materially from time to time.

Among the qualities of steel made under VisControl at the Sparrows Point plant is a low carbon steel for boiler plates and locomotive fireboxes, Bethloc, as this steel is called by the trade, has a tensile strength well within standard requirements; the carbon content is about 0.08 per cent for fire box quality and 0.10 per cent for flange quality, or 30 to 50 per cent lower than that of the ordinary basic qualities. Very careful operating control is essential to produce this steel which is known for its high ductility and impact strength, fine uniform grain structure, and great resistance to grain growth at the usual forming temperatures, as well as to aging and fatigue. The low carbon content and fine grain structure are decided advantages in applications involving high temperatures, shock and vibration, as in locomotive boilers and fireboxes. Successful applications by thirty-two leading railroads and locomotive builders amply prove the value of Bethloc steel.

Steel for rails is another product where the improved control had led to better furnace practice. Recarburization of the heats is never resorted to, but the combination of VisControl and carbometer control makes it possible to catch all heats coming down, at the proper carbon content. This method has contributed greatly to the high uniformity in rail production. The same procedure is also used for high carbon wire, such as tire and spring wire.

Viscosity slag control is also important in the production of low carbon steels for sheet and tin plate which are among the major products of the Sparrows Point plant. They are manufactured in large quantities and the requirements are frequently exacting. With a constant degree of oxidation it is possible to insure the needed cleanliness and to control the ladle additions to the extent where carbon, managanese, and phosphorus are kept within the narrow limits specified.

Cleanliness and freedom from blisters and inclusions, all of which are affected by VisControl, are essential where high ductility and deep drawing properties are required. For many applications sheet and tin plate must withstand extensive deformation in either direction of rolling. Tin plate must be stiff in some cases, and always clean and sound. For beer cans, for instance, a rapidly growing outlet, the plate must be capable of withstanding high pressures; at the same time it must stand double lock seaming.

Steel for lap welded pipe, for oil well casings, with up to 75,000 lbs. tensile strength also calls for high uniformity and close chemical control, both in deoxidation and in ladle additions.

In addition to this high strength quality pipe for use in oil field work the Sparrows Point plant has also made many advances in the manufacture of wrought steel pipe for plumbing, heating and industrial uses.

STEAM POWER PLANT SAVING

By

E. B. Bossart
Mechanical Engineer

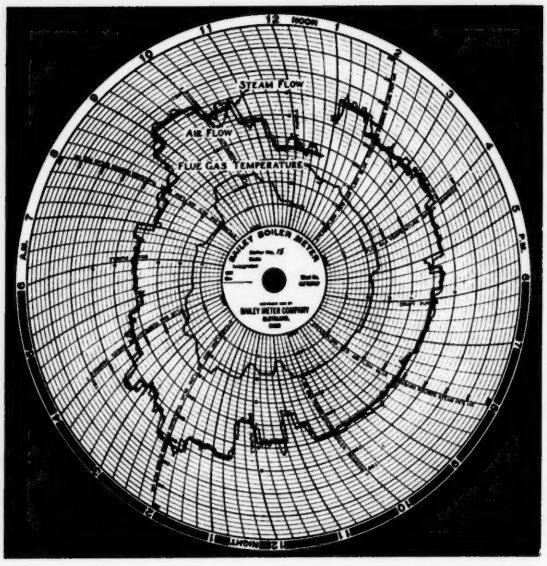
ENGINEERS responsible for the operation of power plants burning all types of fuels have found that the highest combustion economy can be secured only when adequate metering equipment is provided to guide the boiler operators in maintaining the proper proportions of fuel and air.

A typical example of the economies effected by proper instrumentation is the experience of L. L. Vaughn, Professor of Mechanical Engineering at North Carolina State College, in connection with the operation of his power plant.

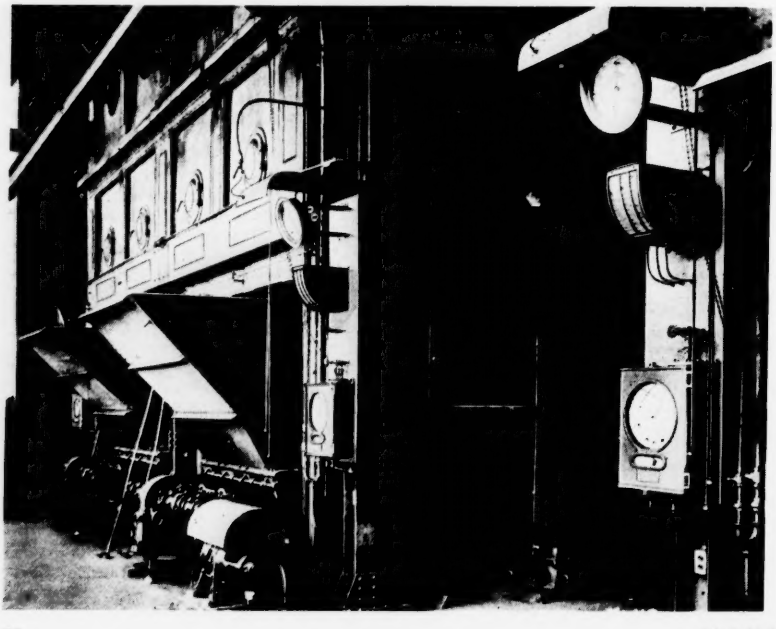
Several years ago he installed Steam Flow—Air Flow Boiler Meters on three Stirling Boilers — one rated at 234 hp and two at 389 hp.

During the heating season prior to the installation of these meters, this plant burned 6,461 tons of coal and generated 482,000 KW-hours of electrical energy. During the following season after the meters had been installed and were in use, the coal consumption was reduced to 5,074 tons in spite of an increase to 655,000 KW-hours of electrical energy generated. Professor Vaughn credits this fuel saving to the installation of the meters. The three boiler meters and accessories, amounted to $2,000, bringing a net annual return of approximately 245 per cent on the investment.

Gross annual saving 1,387 tons @ $4		$5,548.00
Annual Charges of Installation		
Investment (Three Boiler Meters with accessories) ..$2,100		
Depreciation $2,100 + 10 yrs. life	$210.00	
Average interest on investment: ($2100 × .06 + 11) + (2 × 10)	69.30	
Charts (1200 at $2.50 per 100)..	30.00	
Maintenance estimated) $30 per meter	90.00	
Total		$399.30
Net annual saving		$5,148.70
Net annual return on investment		per cent 245



Steam Flow-Air Flow Meter Which Pays for Itself Every Three Months. It guides operation of a 500 horsepower gas fired boiler in a Southern Oil Refinery.



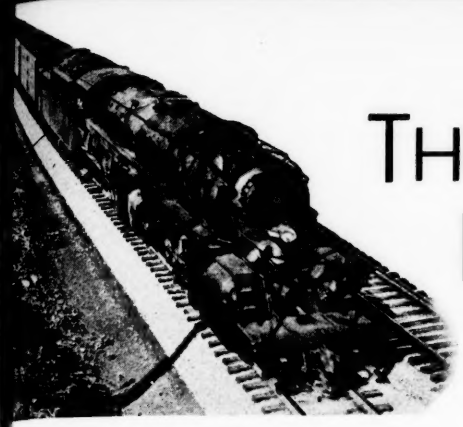
This installation of Steam Flow-Air Flow meters at North Carolina State College produces a net annual return of 245 per cent.

Economies of this nature are being effected by hundreds of Power Plants throughout the South. Irrespective of the various fuels, methods of firing, types and sizes of boilers on which the proper metering equipment has been installed.

A Southwestern oil refinery burning natural gas under 12,500 h.p. boilers has found that it's investment in Steam Flow-Air Flow Boiler Meters is returned every three months. The accompanying chart shows the manner in which boiler operators adjust air supply control so that the blue record of air flow coincides with the red record of steam flow for all rates of steaming. When the records of Steam Flow and Air Flow coincide as shown, 13 per cent excess air is supplied for combustion. This quantity of excess air was arrived at by conducting a boiler test at the time the meter was installed. The object of the boiler test was to reduce the excess air supplied for combustion to the lowest possible value, without obtaining losses from carbon monoxide (CO) in the flue gas; smoke; or deterioration of refractory furnace wall, due to excessive furnace temperatures. In other words, to maintain the highest combustion efficiency, consistent with economical operation, it is necessary for the operator to simply adjust fuel and air control so that the records of steam flow and air flow coincide.

The green record of flue gas temperature indicates whether boiler tubes are covered with soot and need blowing or whether defective or leaky baffles exist in the boiler or whether a leaky boiler setting is causing high infiltration of air. By recording the flue gas temperature on the same chart, along with the rate of

(Continued on page 60)



THE SOUTH SPEEDS UP ITS FREIGHT

Southern Railroads Are Modernizing Equipment, Increasing Operation Efficiency and Improving Service to Reduce Cost to Shippers

THE railroads of the South have contributed materially to the remarkable progress in freight service during recent years. As a matter of fact, they have pioneered in several of the outstanding improvements.

The average speed of freight trains for the country as a whole has gone ahead 55 per cent since 1920, according to the Association of American Railroads. Not as spectacular but of more importance to the economic world than the lopping off of hours in the passenger service, the span between freight terminals from a standpoint of time has steadily lessened. Overnight freight service from points 400 miles distant and greater, with trains averaging 40 miles and upward per hour, and operating with virtually the same dependability as passenger schedules, has helped to remake business habits.

STRIKING examples of speedier freight movement are furnished by Southern roads. Since 1930, one has cut the time between Chicago and New Orleans from 55 hours in either direction to 41 hours on the southbound run and 38 on the northbound. In the same period, the schedule from New Orleans to East St. Louis has been shortened from 41 to 28 hours; Birmingham to Chicago from 40 to 31 hours and Chicago to Memphis from 24½ to 20½ hours. Deliveries a full business day earlier than was possible under the old schedules is the result of these reductions.

The special refrigerator trains for the banana traffic, which six years ago went from New Orleans to Chicago in 50 hours (an exceptionally swift movement then), now travels the distance in 36 hours. Second, instead of third, morning delivery in Chicago has thereby been afforded. Six hours have also been clipped off the 30-hour running time in 1931 of the strawberry trains from Hammond and other Louisiana shipping centers to Chicago.

Other lines offer a fine instance of improved service in the transportation of perishable commodities. In September, 1930, Southern carriers bettered the through schedules from Florida to principal spots in the East and the West, giving 24 hours faster service. A further reduction took place the following year which resulted in an additional saving of 24 hours on carload perishable traffic from Florida to Boston and major New England places. These stepped-up schedules, dependably maintained, were brought about without affecting in any way the time allotted Florida shippers in loading the cars, nor was there a change in the diversion hour privileges. General carload traffic in this region arrives at destinations from 12 to 36 hours earlier than a few years ago, and the time for less-than-carload shipments has been slashed from 24 to 36 hours between various points.

THE greater heights reached in Southern freight service during recent years, lean though they were, didn't just happen. It is the logical consequence of practical and forward-looking steps taken by railroad managements that are ever alert for improvement possibilities.

Numerous changes have entered into this bright picture. More powerful locomotives have been installed; older cars have been replaced with modern equipment of greater unit capacity; bridges have been strengthened and, in some cases, rebuilt; signaling apparatus has developed even greater efficiency; handling of trains through terminals, connection of through schedules and arrangement of arrivals and departures have all been improved; pick-up and delivery service has become universal in the South.

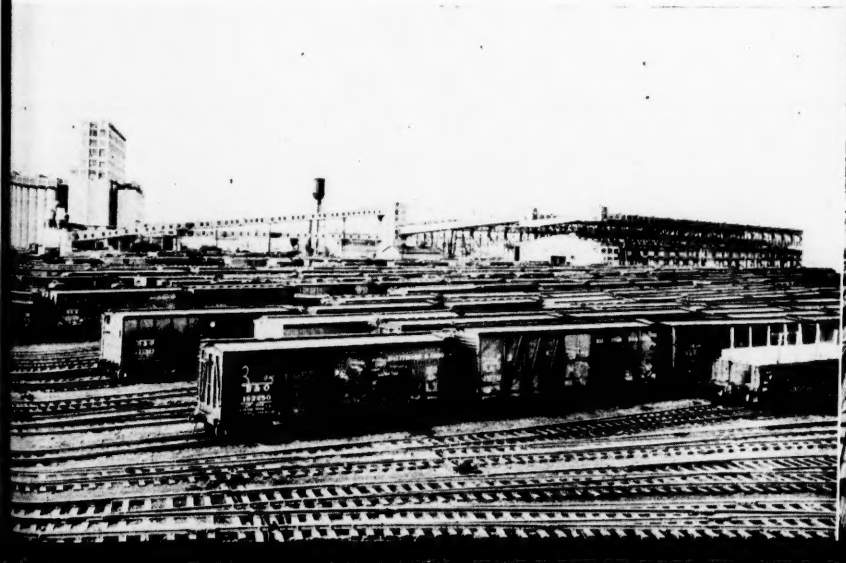
Many lines have increased the size of their locomotive tenders to reduce the number of stops for water and fuel, thereby enabling trains to go 250 miles and more before replenishing their supply. Freight car construction has progressed at such a rapid pace that the average capacity per car for the Class 1 railroads in 1935 was 48.3 tons as compared with 41.0 tons in 1916. This is a jump of 18 per cent.

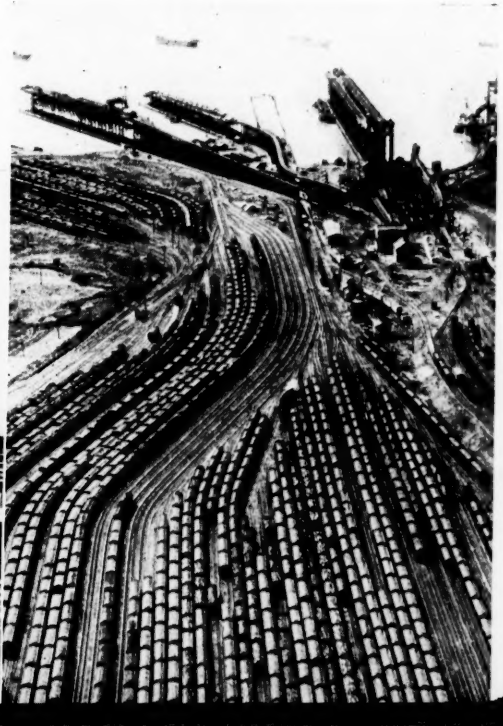
Free pick-up and delivery of L. C. L. shipments, now viewed as an integral part of railway operation, has made freight service more complete, and is responsible to no little extent for the recovery of much business lost to competing carriers. Free pick-up and delivery of freight was first instituted at Baltimore in 1867, but the Southwest introduced it in this country on a large scale in 1931. Incidentally, overnight merchandise freight trains went into operation between St. Louis and points as far away as Louisiana and Texas the same year. Since then, this so-called "special service" has

(*Continued on page* 64)

Right—
N. & W. Terminal, Lambert's Point, Va.

Below—
B. & O. Terminal, Baltimore, Md.





LOUISIANA RECOGNIZES ITS OPPORTUNITY

By
Richard W. Leche
Governor of Louisiana

A Great Agricultural State's New Contribution to America's Advance Will Be in the Modern Fields of Manufacturing

LOUISIANA'S contributions to the sisterhood of states have held for years a prominent place in the political and economic history of the American continent. Louisiana is among the foremost agricultural states of the union. Sugar, rice and cotton have left our alluvial fields for the nations of the world. Our fertile soil is among our richest assets, but in recent years we found untold wealth, too, in our sub-soil, petroleum and natural gas. These, with our large deposits of sulphur and salt have turned our state into the economic channels of industry. Lousisana's new contributions to America's advancement will be in the modern fields of manufacturing and industry.

Louisiana recognizes its opportunity. Its wealth of raw material, its cheap and abundant power, its position as the gateway to Latin and South America lead the state inevitably toward its destiny as an industrial Eldorado.

State Responsibility Translated into Constructive Action

THIS opportunity has imposed a responsibility on the State government which has already been translated into constructive action. As a first step, the Louisiana Legislature repealed the manufacturer's license tax, and second, it created a state board of commerce and industry to carry Louisiana's message to industry throughout the country. Third, and most important, the voters of Louisiana ratified by one of the largest votes in history an amendment to the State constitution which permits the Governor to exempt new factories and additions to existing plants from property tax for a period of ten years.

The State Board of Commerce and Industry is designed to cooperate with the Governor in furthering the industrialization program. The board members, who serve without compensation except for a reasonable per diem allowance and necessary expenses, are all prominent in the industrial and commercial life of the state. An appropriation of $50,000 was fixed for the board's expenses for the year.

Representing labor and most of the state's largest industries, the board members are:

A. B. Patterson, president of New Orleans Public Service, Inc., Charles C. Zatarain, president of E. A. Zatarain and Sons; Aubrey Bartlett, president of Bartlett Chemicals, Inc.; and John M. Taylor, president of the Johns-Manville Company. These four are from New Orleans.

The other members are M. J. Rathbone, president of the Standard Oil Company of Louisiana, Baton Rouge; James Bolton, Alexandria banker; D. T. Cushing, president of the Great Southern Lumber Company, Bogalusa; C. P. Couch, president of the Louisiana and Arkansas railway, Shreveport; E. H. Williams, president of the Louisiana Federation of Labor, Shreveport; Julius Dupont, Houma business man; Arthur Gayle, president of the Louisiana Cattlemen's association, Lake Charles; and M. C. McDonald, president of the Brown Paper Mill, Monroe.

One of Louisiana Operations of Freeport Sulphur Co.

$20,000,000 in New Plants in 6 Months

LOUISIANA is determined to maintain its leadership and remain in the forefront of the industrial progress of the South. This is an objective which we have promised the people of our state. For them, we seek new employment opportunities, we want to encourage the development of our natural resources, and we welcome the coming of new capital. We believe that today we are well on the way to success beyond our anticipations in reaching these objectives. Within the past six months construction of 15 new industrial plants representing an invested capital of approximately $20,000,000 has been begun in Louisiana.

While exact figures are not yet available it is estimated that at least 6,500 men will be employed in the construction of new plants already planned and that probably twice that number will be given permanent employment when manufacturing operations begin. Thus, additional payrolls are provided. They, in turn, create a greater demand for goods and services, and the whole business cycle benefits by this stimulation.

Each of the new industries coming to Louisiana has a logical place in the development of the state as an industrial empire. Three were established to serve the ever-growing Southwest market of which Louisiana is the hub. One, a meat-packing plant, results from the success-

(*Continued on page* 60)

CELLULOSE FROM COTTON

Progress in Exploratory Investigations of Growing and Use of Whole Cotton Plant Opens the Way for Practical Tests by Interested Industries

By

Dr. Frank K. Cameron

Professor of Chemistry, University of North Carolina

EARLY in the study of whole cotton it was found that silica was not only the most prominent, but a large mineral component of the harvested product. It persisted in the pulverized whole cotton, in the residue from which the oil (and waxes) had been extracted and in the cellulose pulp made from the residue. Inspection soon showed that the major part (1) of this silica came from adhering soil, which became attached to the cotton when it was cut and fell to the ground. A part (2) came from dust which settled on the cotton in storage, particularly when stored in the open, and a part (3) is probably inherent to or chemically combined in the tissues of stalk and cusp.

Several manufacturers of harvesting machinery became interested and the John Deere Plow Company sent a crew to the Dockery Farms, near Rockingham, N. C. in October, 1936, to arrange an assembly of tractor, cutterbar, winrow baler, and truck. This assembly proved eminently successful in operation, cutting 2 to 3 rows at the rate of 8 or 10 miles per hour. There was little shattering or loss of lint, and the harvesting was much cleaner and more satisfactory than had been obtained in former experiments and we now regard the problem of harvesting as practically settled. No doubt, and this was insisted upon by the machinery manufacturer's crew, improvements will follow with further experience. The cost figures estimated are gratifyingly low.

The silica from dust (source 2) can be more or less avoided by closed storage, but that would be an additional cost in processing whole cotton. Since it is of minor but not of negligible importance as to amount, a study of its removal has been undertaken in the laboratory together with the silica arising from source (3).

For this purpose a "bad" case, that is, the whole cotton with a high silica content was used. Macormac found about 6 per cent silica in this material so that the pulps he obtained from it averaged about 9 per cent silica. Washing of the pulverized cotton by two or three successive portions of water brought the content in the final pulps to a little more than one per cent. It was found however, that a 3 hour cook of the pulverized and degreased whole cotton in a one per cent sodium hydroxide solution, with agitation followed by a short settling period, produced a black liquor, containing the dispersed pulp in suspension and a sediment at the bottom of the settling tank, which contained the major part of the silica. The cellulose pulp, washed practically free of alkali contained less than one half per cent silica. This cellulose was bleached with chlorine. The consumption of chlorine was surprisingly small, confirming experiments by Egan several years since. But in this bleaching under very slight pressure it was found that recovery of alpha-cellulose was almost complete, while again there was a precipitation to the bottom of the container of a very fine powder, mostly silica. The silica in the bleached pulp had been reduced to one tenth of one per cent.

It is well known that in commercial practice the principal ash constituent encountered in pulping is lime. We have not encountered this difficulty, as a satisfactory water supply is available.

Whole cotton has been found to give a satisfactory alpha cellulose when pulped by the standard methods, sulfite, sulfate, or alkali digestions. Macormac compared the alkali process with the nitric acid process. The whole cotton was comminuted by dry grinding in a hammer mill. The oil and waxes were removed by extracting with benzene.

The extracted residue was then treated with dilute nitric acid, about 2 per cent, for an hour at 90° C. and subsequently treated with a one per cent sodium hydroxide solution containing some sulfite. It was then bleached with chlorine and a higher yield of satisfactory alpha-cellulose obtained than by the standard alkali method. From information subsequently obtained, it appears that in using a higher concentration of nitric acid an even better yield of cellulose would be obtainable. We are finding now that the treatment outlined above for eliminating silica has

(*Continued on page* 64)

Harvesting Whole Cotton at the Dockery Plantation, Richmond County, N. C.
The "army worm" removed the leaves, but cellulose is still available

Clean Harvesting by the Mower-Baler Which Does Not Shatter the Plants
Bales fall in a cart and never touch the ground

SOUTHERN FARM LAND IN DEMAND

Three Out of Four Farms Sold by Federal Land Banks in the South Are Bought by Local Farmers. Improved Agricultural and Credit Conditions. Southern Farms Less Heavily Mortgaged Than Those in Other Sections of the Country

By
W. I. Myers
Governor, Farm Credit Administration

WITH cotton selling for about 13 cents a pound, Southern farm owners are paying up their back bills—with something left over for the purchase of farm land and equipment.

Farmers in the 16 Southern states from Maryland through Texas bought nearly 10,000 farms from the Federal land banks last year. A large part of all the farm land acquired by the banks over a number of years was sold during 1936. Sales increased nearly 100 per cent over 1935; and accounted for more than half of all the real estate sold by the land banks in the entire United States. Cash down payments were larger than at any time since the beginning of the depression.

Farmers Buying Land

The growing demand for farm real estate is based primarily on bona fide agricultural purchasing power. At one time during the depression non-farmers and investors were buying from one-third to one-half of all farm land being sold in the South; but the most substantial factor in the farm real estate market today is the active farm operator. Three out of every four farms sold by the Federal land banks in the Southern states last year were bought by local farmers—most of them for operation by the purchasers.

The going price of a pound of cotton is often taken as a measure of Southern prosperity; but the South's tobacco, truck crops, fruit, hay, grain and forest products also played an important part in raising the cash farm income of 16 Southern states from $1,326,665,000 in 1932 to $2,278,369,000 in 1936. The cash income of farmers throughout the United States, the first part of this year has been the largest since 1930 and may approach $4,000,000,000 for the first six months.

Credit Costs Lowered

The higher income figure does not tell the whole story. Mr. Farm-Owner is not only getting a better price for his bales of cotton, tons of hay, or crates of citrus fruits, but also the price received will go further in buying many essential commodities. One of these commodities is credit. Consider, for instance, a Southern farm-owner who had a mortgage at 6 per cent before the depression and has now refinanced it with a Federal land bank loan. He needs only about one-third as many bales of cotton to pay the annual interest on the same amount of debt today as he did in 1930, and only half as much as in the period of so-called normalcy before the World War. In general, prices received for the major farm products have advanced more rapidly from low points of the depression than prices on the products farmers buy—rent, interest, taxes, wages and other overhead costs.

Second only in importance to income is the farmer's source of credit. The lending by the Farm Credit Administration of over $1,300,000,000 in the 16 Southern states over the past four years has been one reason why recovery in the South has been so substantial. The lending of most of this money was not for new debts but for refinancing old ones, with substantial reductions in interest carrying charges.

The Federal land banks and Land Bank Commissioner have loaned 175,000 Southern farm-owners more than one-half billion dollars since May, 1933, on first and second farm mortgages without materially increasing the overhead indebtedness of these farmers. Well over 85 per cent of the money was used to pay off existing mortgages and other debts. Total interest saving to the farmers in these 16 States was $21,500,000 last year. About half of this saving is permanent. The other half is due to a temporary interest reduction on Federal land bank loans.

Less Heavily Mortgaged

Although it is not generally realized, Southern farms are less heavily mortgaged than those in other sections of the country. In the United States as a whole the farm mortgage debt is approximately 24 per cent of the total value of farm land and buildings. The percentage is smaller in all but three of the 16 Southern states. Since 1933, farm foreclosures in the South Atlantic States have been cut in half and marked decreases have also occurred in all the other Southern states.

In 1935, an Act of Congress authorized the Farm Credit Administration to make long-term second mortgage farm loans for farm purchasing in addition to the long-term first mortgage loans which the land banks have been making during the past 20 years. In the 18 months since the Act became operative, an increasing number of farmers and qualified tenants have obtained loans to purchase farms. This financing, of course, does not apply to all tenants. Tenants, however, who accumulate some savings and show ability as farm managers will undoubtedly benefit in increasing numbers from the availability of this credit.

In many other ways the Federal land banks are broadening their services to Southern farmers. One example of this is the plan recently put into operation of making loans on the insured productivity of turpentine forests.

Short Term Loans

Equally as important as the reestablishment of farm mortgage credit on a stable basis in the Southern states, has been the work done by the newly organized production credit associations in providing cash loans for short-term needs. By financing their production on a cash basis instead of on time farmers can usually effect a substantial saving. This, of course, means greater purchasing power.

Organized in 1933 and 1934, the 300 cooperative production credit associations in the 16 Southern states have steadily increased their business, lending $72,000,000 to 125,000 farmers last year as compared with $33,000,000 loaned to 77,000 farmers in 1934, the first year of their operation. So far this year the associations have increased their business by about one-third.

The loan volume of these association

(*Continued on page* 62)

COASTAL PLAINS AREA OF GEORGIA

Developing Industries and Markets For Its Great Agricultural Resources

By

W. E. Aycock

General Agricultural and Industrial Agent
Georgia & Florida Railroad
Moultrie, Ga.

THE transformation of the South from an all agricultural country into a mixed agricultural and industrial section in less than half a century is a story of progress, which, when fully written should rival a best seller in fiction.

Forty years ago, as a youngster living in Griffin, Ga., I was told by the late W. J. Kincaid, pioneer cotton manufacturer of that city, that the cotton mills would come to the cotton fields, that economic conditions would force them to get nearer the source of supply of raw material. The movement was well under way before Col. Kincaid's death, many years ago. A prophesy and the fulfillment of that prophesy of industrial development of the South, which, during the past few years, has become tremendously accelerated not only in textiles but in other manufacturing.

Four out of five of the largest meat packers in the world now operate plants in Georgia. The development of that industry in the Southeast really began in 1914 when the citizens of Moultrie, Ga., in an effort to establish a cash market for something besides cotton, to offset impending damage to cotton production by the advent of the boll weevil, built a small meat packing plant at that place.

So rapid was the response by the farmers in growing livestock, and especially hogs, that in three years the plant was sold to Swift & Co., in order to get someone with ample finances and distribution facilities to increase the size of the plant and maintain a continuous cash market, it having been the main idea of the Moultrie people to create a cash market. Now, 20 years later, this plant is slaughtering, during season, 2500 head of hogs and 1000 head of cattle daily.

Southern farmers always have raised and fattened hogs on peanuts. The crop is planted and the hogs gather it. Therefore, it is the most economical way to finish them for market. After Swift bought the old Moultrie Packing Co., they enlisted the aid of Moultrie business men to educate the farmers in feeding corn to produce what they called "hard meat."

However, the Southern farmer just wouldn't finish them that way. They said: "peanut fattened pork is better flavored and more easily digested than corn fed. When a feller gets a taste o' peanut pork he jes' wont eat no other kind."

Swift and Company's Pork Packing Plant at Moultrie, Ga.
Buildings in foreground are new additions

After a few years experimentation, Swift perfected a commercial cure for peanut pork, and so popular has it become the other big packers have been forced to build plants in the South to meet the competition.

Establishment of these packing plants has given an added impetus to growing and finishing for market, better beef cattle. For several years the Southeast has been importing purebred beef type bulls and breeding up the cattle. A number of local farms are now devoted to the production of purebred cattle for breeding purposes, notably the Seminole Farms at Donalsonville, Ga., which produce Hereford cattle and Poland China hogs exclusively. This is said to be the largest purebred breeding farm south of the Ohio and east of the Mississippi rivers.

Beef cattle and slash pine for pulpwood are now being grown on the same land in territory served by the Georgia & Florida Railroad. There is a ready cash sale for both these products. Carpet grass and Lespedeza furnish grazing for ten months and often the winters are so mild grazing on these grasses lasts throughout the entire year.

Spanish peanuts is another crop that is being produced in larger volume in the Southeast each year. In Georgia alone this crop is valued at twelve to fifteen million dollars a year. There are 65 shelling plants located in the state. The

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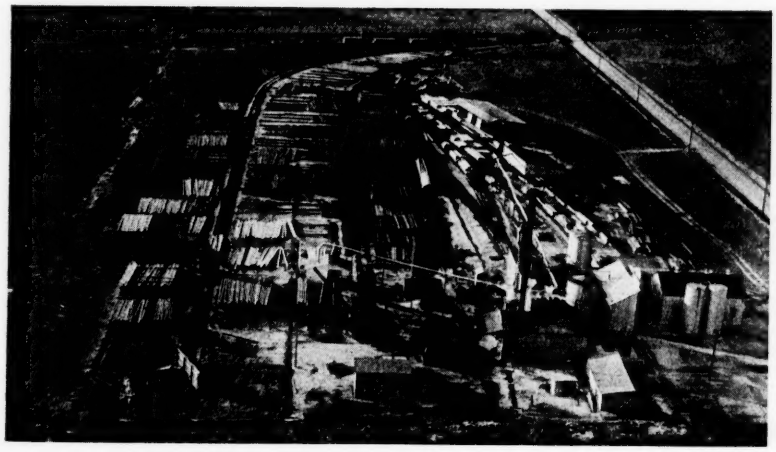


The Piedmont Company, Augusta, Ga.
Established in 1929 for treating forest products, poles, ties and lumber, giving both the standard creosote and the Zinc Meta Arsenite (salt) pressure treatment, this company is now turning out five cars of poles and treated material daily

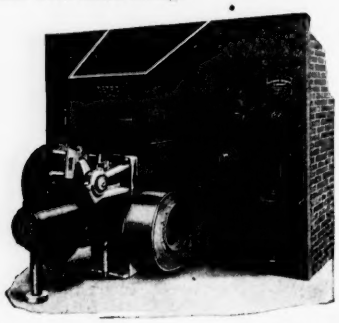
ECONOMICAL STEAM GENERATION

Stokers Pay Dividends in Modernization Investment

By

Thatcher W. Rea, B.S.-M.E.

MODERNIZATION of the average boiler plant will effect substantial savings. Obsolete boilers and wasteful firing methods, aside from the extra expense of fuel consumed, cause losses to building owners from smoke damage. Often times less expensive grades of coal can be used with stokers than with hand firing.



Single retort side cleaning, mechanically driven stoker of the unit type, suitable for medium sized boilers in textile mills, and process steam industry is compact unit with motor or steam turbine driven blower mounted at the stoker front. Each boiler and stoker is an independent self-contained unit automatically controlled.

Coal, if properly fired, insures uniform automatic heat at low cost. Important in modernization of boiler equipment is the consideration of the best firing method. Proper coordination of boiler and stoker equipment is essential. Combustion chamber sizes should be carefully studied to insure the best results. Advance has been made by both boiler and stoker manufacturers and definite standards of setting heights established so that the installation, when completed, complies with all local smoke ordinances.

Many times the replacement of boilers is not necessary, provided they are adaptable for stoker application. In addtion to the saving in quantity of fuel that should be realized, there are several advantages which might justify the installation of stoker equipment. They are:

1. Ability to burn a cheaper size of coal.
2. Ability to obtain increased capacity.
3. Smokeless operation.
4. Greater flexibility.
5. Automatic control.
6. Less labor.

With an Underfeed stoker, 1¼-inch to 2-inch bituminous coal screenings are widely used. These sizes can usually be purchased at a lower price per ton than run of mine or lump sizes of coal customarily used with hand firing. The saving in price per ton of coal is usually a big item.

Compared with natural draft hand firing, a stoker can be provided that will give increased capacity. In many cases, the installation of stokers not only saves installing additional boilers but also expensive alterations in buildings which would be required to make way for new boilers.

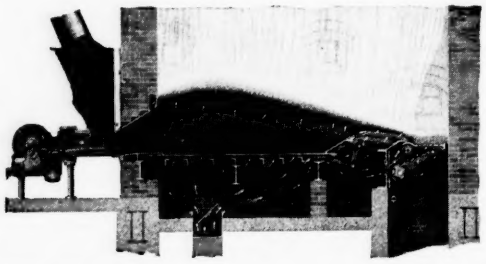
With hand firing it is difficult to prevent smoke which is the result of incomplete combustion. With stoker firing and a proper setting, combustion is complete and objectionable smoke is eliminated. Smokeless operation is not only desirable from a civic standpoint but from an investment as well.

Automatic control is usually provided for stoker installation so as to maintain uniform pressure.

As to the use of less expensive grades of coal, a hotel at Luray, Va., reports a saving of 50 cents per ton in the price of coal. A hotel at Asheville, N. C., reduced its fuel bill from $1,640 to $980, or a saving of 40 per cent the first year the stoker equipment was in operation.

The Virginia Hot Springs Co. (The Homestead) at Hot Springs, Va., reports an approximate saving in the cost of coal of 90 cents a ton on 10,000 tons annually due to modernization of firing equipment.

At the Winchester, Va., plant of the O'Sullivan Rubber Co., a saving of $1,407 was effected by the installation of a stoker with one 150 horse power HRT boiler formerly hand fired. In addition to saving in coal and labor, a constant steam pressure was maintained.



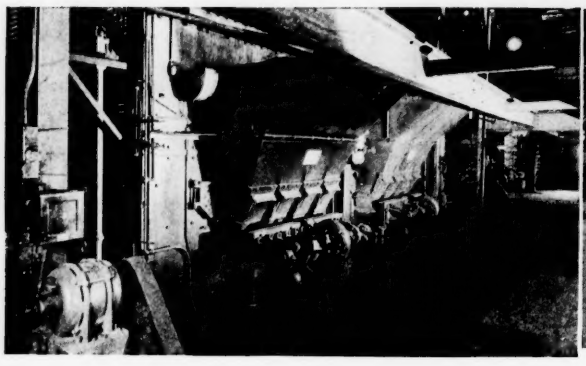
Multiple retort stoker for large boilers and high capacities, extensively used throughout the South. The feed of the fuel and its distribution in each retort is adjustable. The inclined fuel bed with the horizontal retorts, makes this stoker particularly adaptable to installations with present boilers as no basement is required for ash removal.

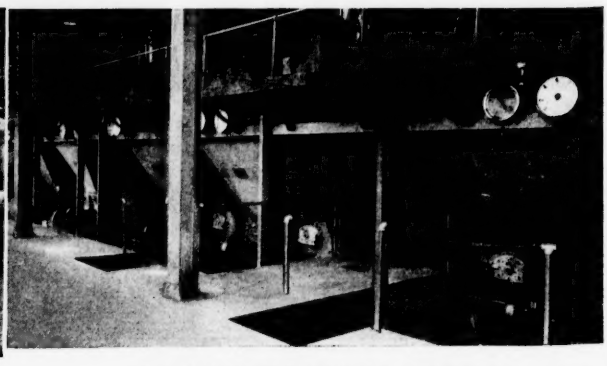
More capacity with the same boiler was obtained while using a lower fusing coal of high quality which resulted in saving an amount of money equal to the new stoker equipment, reports The Bartgis Bros. Co., makers of folding boxboard containers, Ilchester, Md.

Other industrial plant owners, public institutions, churches report equally important economies after installation of modern stoker equipment.

Detroit Multiple Retort Stoker
W. D. Byron & Sons, Inc., leather plant, Williamsport, Md.

Detroit UniStoker
The "Homestead" Virginia Hot Springs Co.





MORE INDUSTRIES FOR THE SOUTH

$125,000,000 Investment in First Six Months of 1937 Continues Advance of Last Year

CONTRACTS aggregating over $125,000,000 were let in the South during the first six months of this year to build new industries and improve and expand existing plants. This capital investment went into Southern industrial channels already seething with activity in what is one of the epochal periods of the economic history of the 16 Southern states.

Establishment of new paper plants continues to rival the movement of a decade or so ago, when textile manufacturers went in large numbers into the South, not only to locate closer to their source of raw material—the Southern cotton fields—but to secure better labor conditions. One of the world's largest paper makers, the International Paper Co., the past month announced the selection of Louisiana as site for a $9,000,000 plant for its subsidiary, the Southern Kraft Corp. This is the fifteenth plant of its kind either completed, under way or proposed in the South since the rush started over a year ago. The investment to date is over $90,000,000.

Utilities, beset on every side by Federal intervention and the additional distress of a proposal to cover the country with T. V. A. facsimilies, have found it necessary to launch programs not only for increasing their generating capacities but for widening the range of their transmission and distribution systems.

Among the companies expending large amounts for such expansions are:

Virginia Electric and Power Co., Richmond; Southwestern Gas and Electric Co., Shreveport; Consolidated Gas Electric Light and Power Co., Baltimore; Alabama Power Co., Birmingham; Georgia Power Co., Atlanta; Oklahoma Gas and Electric Co., Oklahoma City; Tennessee Electric Power Co., Chattanooga, Tenn.; Dallas Power and Light Co., and the Potomac Edison Co. of Hagerstown, Md.

Railroads under the heavy pressure of more passenger and freight traffic have awarded contracts mounting into millions of dollars for new and heavier rail and for thousands of new units of rolling stock to place them in more successful competition with bus and truck operators through improved appointments for comfort and for speeding transportation of both passengers and commodities.

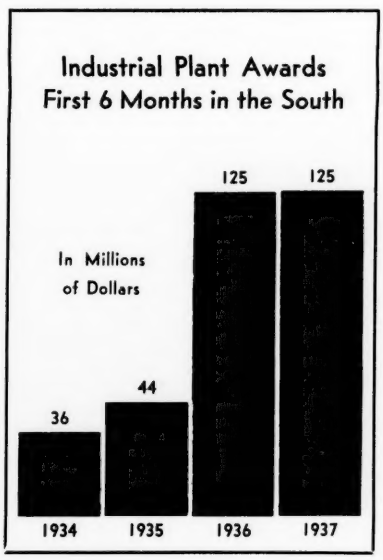
These contracts with car and locomotive and equipment manufacturers both in and out of the South, as well as the car construction being undertaken in Southern railroad shops by roads, including the Norfolk and Western, Missouri-Kansas-Texas lines and the St. Louis-Southwestern, and the great activity in building construction serve greatly to increase steel operations. The largest expansion on record has resulted at Southern steel producing centers of Birmingham and Baltimore.

The new facilities, when completed, will also place the South in a still more advantageous position to supply the demands of a can manufacturing industry already growing rapidly and extending into new fields. Glass manufacturers in turn have entered the can field and the country's important producer of bottle caps and similar specialties is now planning to build a new manufactory in Missouri with reports current predicting that the same manufacturer will soon produce a specially designed glass container. Bulk of the country's metal containers are produced by Crown, National, American, Continental and Owens-Illinois can companies, all of whom have expanded in the South.

Developments in the container industry — glass, metal, paper — all hinge to some extent on the almost phenomenal expansion of food handlers such as packers and canners, dairies, and the beverage, distilling and brewing organizations. Names of many large distilleries such as Seagram, and popularly familiar beverage makers including Coca Cola, as well as the country's best known packers, notably Armour and Swift, have all been mentioned in reports of new facilities being established in the South.

Natural gas, gasoline and oil producers have been active within past months in projecting new lines, constructing new plants, and improving or rebuilding others and establishing facilities to increase pressure during transportation of the "liquid and gaseous gold." Most important among the recent proposals is the $1,750,000 plant to be built at Goldsmith, Tex., by the Phillips Petroleum Co.

A new entrant into Virginia rayon manufacturing, the American Cellulose and Chemical Manufacturing Co., Ltd., has announced that an initial unit of a development ultimately to cost $30,000,000 is to be started immediately in the Old Dominion where other prominent producers already have plants which turn out the largest percentage of the country's total of the cellulose product. Many Southern rayon firms for sometime have been carrying out important programs to speed up and increase production.



Virginia will also have a large tobacco plant addition in the Richmond area. There Phillip Morris Co., Ltd., Inc., will spend $700,000. The industry also will be augmented by such projects as the large warehouses at Louisville for Brown and Williamson and at Wheeling, W. Va., for Bloch Brothers.

Louisiana's sugar industry continues to expand, a new $1,000,000 plant being under construction at Iberia.

Increasing activity in coal mining is evidenced by Crystal Block Coal and Coke Company's plans for developing 10,000 acres at Grundy, Va., the proposal to reopen mines at Sanford, N. C., by the Carolina Fuel and Transportation Co., and the expansion of the Continental Coal Co., of Fairmont, W. Va.

Houston, Tex., calls attention to its industrial growth, which for the first half of this year involved an outlay of $10,000,000 including a $4,000,000 oil refinery and a variety of smaller industries. Dallas also is recording advances along industrial lines, including a $300,000 storage battery plant and an important packing plant addition. Other Texas industries are a new flour mill at Greenville and an Iso-octane refinery at Port Arthur.

In Alabama the Tennessee Coal, Iron and Railroad Company's $31,000,000 expansion, is the outstanding development.

New industries in Louisiana under a bill passed by the last Legislature are tax exempt for ten years and among the new industries in that state are a $2,800,000 tetraethyl plant and a $2,750,000 lubricating oil plant at Baton Rouge and a $1,000,000 chlorine plant. One of Baltimore's new industries will be a $2,000,000 sulphuric acid recovery plant to be operated in conjunction with the Krebs Pigment and Color plant. Nashville's $125,000 steel fabricating plant and $2,000,000 carbon and phosphate operations at Columbia stand out among Tennessee's new industries.

Among other plants mentioned during recent months and the expenditures being made by each are:

Anderson Cotton Mills, Greenwood, S. C., renovation, new machinery	$1,000,000
Administration Research Corp., Sarasota County, Fla., developing slash pine	1,000,000
Alabama Naval Stores, Inc., Mobile, Ala., new plant	150,000
American Brewing Co., New Orleans, La., enlargement	200,000
American Can Co., Tampa, Fla., addition	195,000
American Cellulose & Chemical Manufacturing Co., Ltd., Pearisburg, Va., rayon plant	5,000,000
American Liberty Pipe Line Co., Dallas, Tex., booster station	100,000
American Oil Co., Charlotte, N. C., building	100,000
American Steel & Wire Co., Fairfield, Ala., modernization	200,000
Appalachian Electric Power Co., Richmond, Va., buildings	200,000
Armour & Co., Charlotte, N. C. packing plant	200,000
Deward C. Baird, Houston, Tex., bakery	100,000
Baltimore & Ohio R. R., Baltimore, Md., cars	10,000,000
Barnsdall Refining Co., Corpus Christi, Tex., terminal, pipe line	500,000

(*Continued on page 64*)

CONSTRUCTION SETS 7-YEAR RECORD

CONSTRUCTION contracts in the Southern states as reported in the DAILY CONSTRUCTION BULLETIN mounted to $429,411,000 during the first six months of 1937, the highest peak reached since 1930. The private building total of $91,677,000, or twice the amount of such work undertaken during the same period of last year, outweighed the lower highway and public building lettings and with the help of $125,260,000 in industrial construction awards raised the half-year total $5,000,000 above that for 1936.

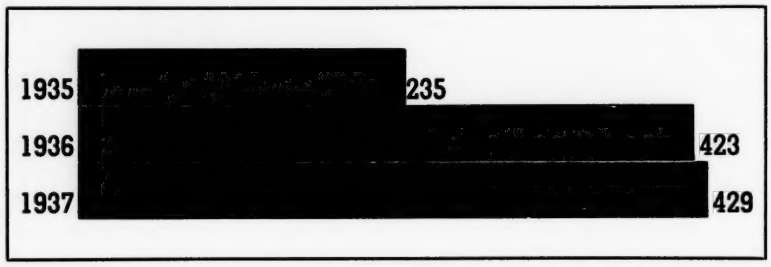
The record rate of industrial construction for last year has been maintained during the first six months of 1937. Further pulp and paper plant construction was indicated when last month Louisiana was selected as a site for a new $9,000,000 unit. Many other industries, widely diversified have all shared in the rapid growth.

Gains were made in the various types of private buildings as classified by the *Manufacturers Record*. Apartment and hotel work valued at $18,408,000 was about 23 per cent ahead of that for the similar period last year. New dwellings so far this year have cost $46,976,000, compared with $20,514,000 for the first six months of last year. Store buildings and improvements have cost $17,831,000 as compared with $6,337,000 for the first half of last year. Church and bank and office work almost doubled and association and fraternal organizations increased their building to over treble that launched through June last year.

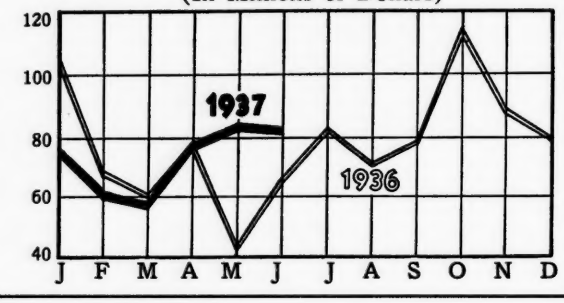
Drainage, dredging and irrigation work and construction of levees, revetments, seawalls, and similar structure is going faster this year. Filling station construction is also well ahead of the same period in 1937, although sewer and water works construction has fallen five million dollars from the total at the end of last June. Road, street and bridge construction so far in 1937 is costing $98,436,000; last year's comparable period had seen work started valued at $119,584,000. The public buildings total of $80,345,000 is composed of $56,314,000 for various municipal, county, State and Federal projects, the rest being for expansion of the South's educational facilities. Last year the

(Continued on page 40)

Contracts Awarded in the South in Millions of Dollars
First Six Months



Contracts Awarded by Months in the South, 1936-1937



Southern Construction by States

	First Six Months, 1937 Contracts Awarded	First Six Months, 1937 Contracts to be Awarded	June, 1937 Contracts Awarded	June, 1937 Contracts to be Awarded
Alabama	$12,073,000	$65,162,000	$1,549,000	$3,086,000
Arkansas	5,295,000	14,097,000	1,082,000	2,910,000
District of Columbia	36,275,000	50,230,000	6,184,000	3,445,000
Florida	38,571,000	65,345,000	5,541,000	8,296,000
Georgia	21,538,000	62,774,000	5,242,000	7,242,000
Kentucky	17,107,000	33,462,000	1,926,000	5,066,000
Louisiana	40,570,000	77,893,000	25,602,000	11,078,000
Maryland	37,950,000	120,034,000	4,657,000	8,592,000
Mississippi	20,513,000	100,684,000	4,118,000	32,200,000
Missouri	31,754,000	92,004,000	2,742,000	10,670,000
North Carolina	25,338,000	84,209,000	2,455,000	5,891,000
Oklahoma	15,657,000	48,892,000	1,996,000	17,861,000
South Carolina	11,049,000	52,298,000	2,484,000	3,165,000
Tennessee	17,171,000	61,754,000	1,034,000	7,045,000
Texas	67,107,000	226,282,000	8,815,000	29,181,000
Virginia	21,834,000	86,595,000	2,592,000	13,882,000
West Virginia	9,609,000	63,909,000	2,794,000	3,366,000
Total	$429,411,000	$1,305,624,000	$80,813,000	$172,977,000

Southern Construction Activity

	First Six Months, 1937 Contracts Awarded	First Six Months, 1937 Contracts to be Awarded	First Six Months, 1936 Contracts Awarded	First Six Months, 1936 Contracts to be Awarded	June, 1937 Contracts Awarded	June, 1937 Contracts to be Awarded	June, 1936 Contracts Awarded	June, 1936 Contracts to be Awarded
GENERAL BUILDING								
Apartments and Hotels	$18,408,000	$29,221,000	$14,187,000	$13,294,000	$ 3,066,000	$ 5,394,000	$3,573,000	$1,355,000
Association and Fraternal	1,324,000	3,113,000	409,000	1,253,000	98,000	365,000	.....	173,000
Bank and Office	5,009,000	13,169,000	2,735,000	1,903,000	552,000	1,347,000	331,000	60,000
Churches	2,129,000	6,744,000	1,519,000	4,285,000	478,000	855,000	409,000	558,000
Dwellings	46,976,000	32,424,000	20,514,000	13,501,000	6,235,000	5,510,000	4,998,000	1,177,000
Stores	17,831,000	21,437,000	6,337,000	9,656,000	3,078,000	2,673,000	1,152,000	1,442,000
	$91,677,000	$106,108,000	$45,701,000	$43,895,000	$13,507,000	$16,144,000	$10,463,000	$4,765,000
PUBLIC BUILDINGS								
City, County, Government and State	$56,314,000	$148,501,000	$63,351,000	$109,082,000	$11,653,000	$21,782,000	$7,358,000	$7,679,000
Schools	24,031,000	79,132,000	32,242,000	47,070,000	6,679,000	14,119,000	2,763,000	3,014,000
	$80,345,000	$227,633,000	$95,593,000	$156,152,000	$18,332,000	$35,901,000	$10,121,000	$10,693,000
ROADS, STREETS and PAVING	$98,436,000	$456,175,000	$119,584,000	$170,658,000	$28,815,000	$67,320,000	$18,263,000	$13,430,000
INDUSTRIAL and ENGINEERING								
Drainage, Dredging and Irrigation	$12,962,000	$59,825,000	$11,653,000	$91,200,000	$ 1,212,000	$ 7,118,000	$4,411,000	$4,090,000
Filling Stations, Garages, etc.	3,077,000	3,425,000	2,352,000	3,825,000	448,000	398,000	284,000	250,000
Industrial Plants	125,260,000	407,027,000	125,486,000	242,543,000	16,757,000	42,176,000	20,401,000	17,505,000
Sewers and Waterworks	17,654,000	45,431,000	22,986,000	44,486,000	1,742,000	3,920,000	3,908,000	2,782,000
	$158,953,000	$515,708,000	$162,477,000	$382,054,000	$20,159,000	$ 53,612,000	$29,004,000	$24,627,000
Total	$429,411,000	$1,305,624,000	$423,353,000	$752,759,000	$80,813,000	$172,977,000	$67,851,000	$53,515,000

Do you remember

when this appeared in the Baltimore newspapers?

THE announcement reproduced here was published in Baltimore newspapers fifteen years ago today. It told of a very important event—the opening of a great refinery of the American Sugar Refining Company on a 20-acre tract adjacent to the Locust Point Yard of the Baltimore & Ohio RR. There is no finer refinery in the world.

Today we are celebrating this anniversary—not by holiday festivities, but by productive work — the refining of raw cane sugar into that famous line of Domino Cane Sugars.

This occasion, however, does seem to warrant a brief review of the part our Baltimore refinery has played in the industrial life of this City. The facts are really amazing:

How much raw sugar, do you think, has been melted since our opening fifteen years ago?

8,388,281,438 pounds!

How many ships have docked at the refinery during this period?

Nearly seventy a year — 1011 to be exact, up to December 31, 1936.

How much money has been paid in U. S. customs duties?

$64,000,000.00.

How much money has been paid to the City of Baltimore and State of Maryland in taxes?

$1,622,663.00.

How much money has been paid to Baltimore for City water consumed?

$457,884.00.

How much coal and fuel oil have been purchased?

1,312,983 long tons of coal — 495,653 barrels of oil.

How much money, would you guess, has been paid out in wages and supplies, exclusive of raw sugar purchases?

$42,415,537.00.

How much freight — both incoming and outgoing — has been handled?

The equivalent of 240,714 cars.

• Surely these figures demonstrate that the American Sugar Refining Company has made good its promise to contribute its utmost to the promotion of business and prestige of the City of Baltimore.

We valued your co-operation when we established the Baltimore refinery fifteen years ago. Our contribution to the welfare of Baltimore and Maryland can be continued through your purchases of our products — Domino Package Sugars.

Earl D. Babst

May 17th, 1937 ***Chairman***

"Sweeten it with Domino"

Refined in U. S. A.

We thank you — Baltimore

EVERY citizen of this community is interested in the simple announcement that the new refining plant of the American Sugar Refining Company, at Locust Point, has begun operations.

The rapid construction and equipment of this refinery is one of those romances of industry which make industry so much worth while. We believe the story will appeal to your imagination in fulfillment as it has to ours in its unfolding.

Two years ago today ground was broken on this quarter-mile frontage on the Patapsco River. Today the enterprise stands completed. A new skyline has appeared on the waterfront. Fifteen buildings have been erected. Machinery has been installed. And the wheels are turning.

Commerce is the handmaid of industry. Before the beginning of refining operations, ships from the tropics have been discharging their cargoes of raw sugars at newly constructed wharves. In return their holds are offered for the carrying of Baltimore's export merchandise to the peoples across the seas.

The port and its ships is on one side and on the other the vast systems of railways which converge in this industrial center. Between them this new refinery, served by each, contributing to each. Thousands of freight cars have carried building supplies and equipment to Locust Point. Thousands more each year will be required to convey supplies thither, and thence to wide-flung markets with freights of finished sugars. A new industry, employing many within its walls, and on its wharves and ships, bringing commerce to the port, stimulating trade, attracting allied industries, and devoted to service to the community—is not this a thing to stir the hearts of all of us?

Without the hearty co-operation of the people of Baltimore, your business interests, city and state authorities, railroads and port officials, this achievement would not have been possible. For this co-operation, and for the hearty welcome extended to us, most sincerely we thank you.

On January 16, 1920, at a dinner given by Alexander Brown & Sons, we said:

> "You must certainly know how deeply we appreciate the warmth of this official greeting from Mayor Broening, in behalf of the City of Baltimore, how gratified we are to be the guests of Mr. Brown and of his associates, and how significant to us is this cordial welcome from the business organizations of Baltimore.
>
> "We already have sensed the meaning of this welcome in the splendid co-operation we have had from Mayor Broening, from President Howard Bryant and from the other members of your municipal family, just as we have had the most cordial, generous and helpful co-operation from Mr. Daniel Willard, from Mr. George M. Shriver and from the members of their capable staff in the Baltimore & Ohio Railroad Company.
>
> "No less do we appreciate the welcome from your influential newspapers and the friendliness of their editorial comment. We wish you to know how anxious we are to deserve, by reason of our own achievements here in Baltimore, the right to share with you a proud distinction by becoming real Baltimoreans."

That was on the eve of beginning construction of the new refinery. Today, witnessing its completion, we can only say that the co-operation extended by Baltimore has been as generous as its promises. There has been a fine spirit of helpfulness that has heartened us in carrying through this great undertaking, uninterruptedly, in a period of unusual business conditions.

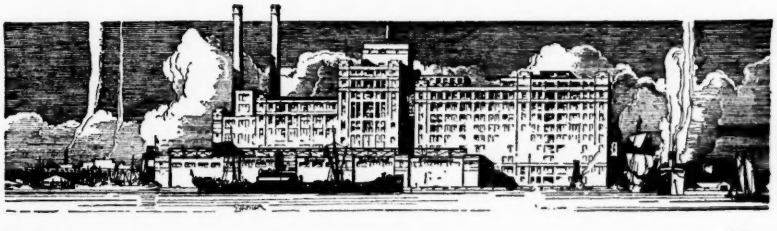
Baltimore now regains its position as a great sugar refining center which it occupied a half century since. Here is one of the most modern and efficient plants ever constructed for the refining of sugar. From this vantage point, the surrounding territory, southward and westward, will receive prompt supplies of the cane sugars and sugar products which the new refinery will produce.

In accepting the cordial invitation of Baltimore to establish a plant in your city, we declared our intention of making this enterprise an integral part of your business structure and of becoming industrial citizens of your community in the truest sense. Now, in this public expression of our gratitude for your kindness and co-operation, we renew this pledge. In behalf of our Officers, Directors and 28,000 Stockholders, for your help and co-operation, we give you our sincere thanks.

Earl D. Babst

May 17th, 1922 *President*

American Sugar Refining Company



Construction Sets 7-Year Record

(*Continued from page* 38)

totals were $63,351,000 for Governmental building; $32,242,000 for schools.

The year's high construction pace set in the preceding month was practically continued in June as awards for engineering, building, industrial and highway work in the Southern States mounted to $80,813,000. This figure is almost one-fifth above the total for the same month of last year and the highest for any sixth month since 1930.

Two factors largely responsible for the favorable June total were road contracts, which soared to $28,815,000 and represented the greatest total for highway, street and bridge construction for any month after May of 1931, and industrial plant construction and expansion with its slightly higher total than that for May of this year.

General building contracts were valued at $13,507,000, a continuance of the decline first noted in May. Erection of dwellings costing $6,235,000 dominated the general private building field, although it showed a slackening of about 33 per cent as compared with the previous month. Apartment and hotel work valued at $3,066,000 and store construction of $3,078,000 which, together with dwellings, accounted for the bulk of the general building, dropped but a negligible one per cent from May's figures. Public building also decreased. Its dip to $18,332,000 from May figures was almost 25 per cent. Work undertaken by city, county, state and Federal agencies cost $11,653,000, a decided drop from the awards of May. School construction of $6,679,000, however, was greater than for any month of this year.

Representative Projects in the South Last Month

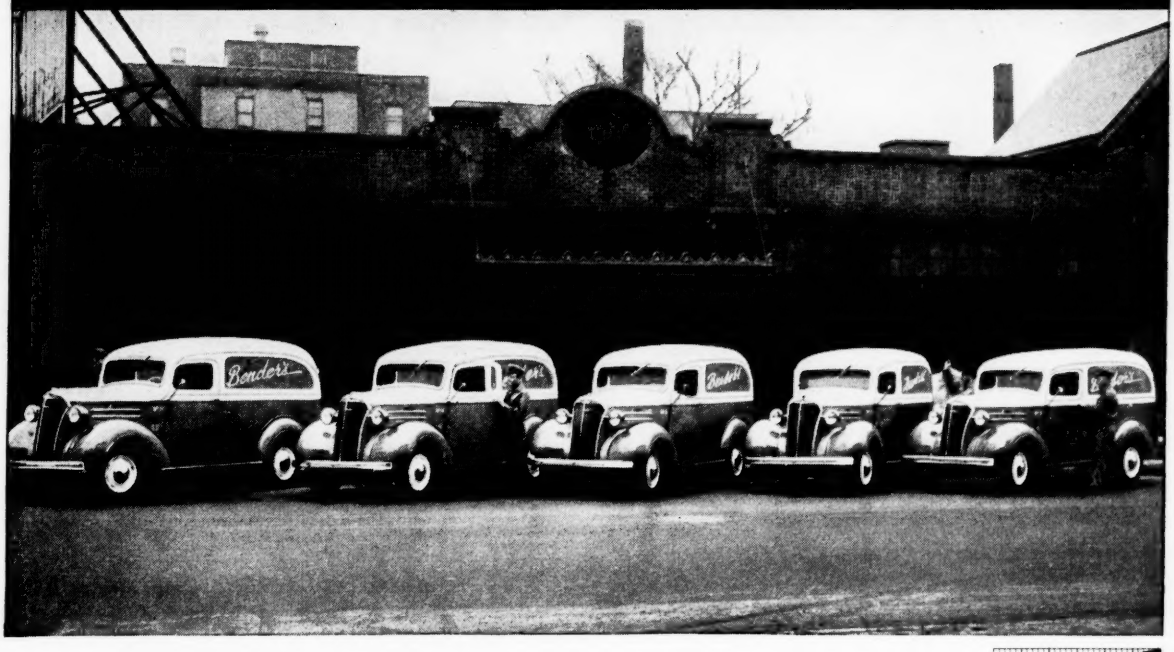
Contracts Awarded

Alabama—Tennessee Valley Authority
Road Relocation; Chickamauga Construction Co., Birmingham, Contr. $171,000
Ala., Birmingham—Birmingham Paper Co.
Paper plant; Southern Construction Co., Contr. 165,000
D. C., Washington—District Commissioners
Street work; W. F. Brenizer Co.; Wilmoth Paving Co.; Highway Engineering Co.; McGuire & Rolfe Co.; Union Paving Co., Contrs. 657,030
D. C., Washington—Treasury Department
Metal stacks and filing equipment; Breeze Corporation, Newark, N. J., Contr. 1,820,000
Fla., Jacksonville—City Commission
Electric light plant; General Electric Co., Schenectady, N. Y.; Allis-Chalmers Manufacturing Co., Milwaukee, Wis.; Florida Engineering and Sales Co., Jacksonville.; Ward Engineering Co.; Jacksonville; Scovill Manufacturing Co.; Chase Brass and Copper Co., Waterbury, Conn. Contrs. 917,000
Ky., Berea—Berea College
Memorial building and chapel; Struck Construction Co., Louisville, Contr. 400,000
Ky., LaGrange—State Department of Welfare
Prison dormitories; A. L. Coupe Construction Co., Louisville, Contr. 327,000
La., Baton Rouge—Louisiana Highway Commission
Bridge substructure; Kansas City Bridge Co., Kansas City, Mo., Contr. 2,421,000
Superstructure; Bethlehem Steel Co., Bethlehem, Pa. .. 3,705,000
La., New Orleans—Charity Hospital
Main building; George A. Fuller Co., (low bidder) 5,894,000
La., New Iberia—Iberia Sugar Cooperative Inc.
Sugar mill; Pittman Brothers Construction Co., New Orleans; Buffalo Forge Co., Buffalo, N. Y., Contrs. 1,000,000
La., Spring Hill—Southern Kraft Corporation
Paper plant; Beloit Iron Works, Beloit, Wis., Contr. for fourdrinier machines 9,000,000
Md., Annapolis—Navy Department
Radio towers; Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa., Contr. 283,000
Md., Baltimore—City
Bridge; Kaufman Construction Co., Philadelphia, Pa., Contr. 1,270,000
Md., Baltimore—Park Central Realty Co.
Apartment house; Robert M. Katts, Builder, New York .. 175,000
Mississippi—Bureau of Public Roads
Road; Hodgkins-Adams Co., Winchester, Ky., Contr. 307,000
Miss., Sardis—United States Engineer
Dam fill; Hooper Construction Co., Bunnell, Fla., Contr. 670,000
Mo., Kirkwood—Carmelite Sisters
Memorial building; Fruin-Colnon Contracting Co., St. Louis, Contr. 150,000
Mo., St. Louis—Board of Public Service
Armory superstructure; H. B. Deal and Company, Inc., Gen. Contr. 1,250,000
N. C., Greensboro—North Elm Apartment Co.
Apartment House; George Kane, Contr. 450,000
S. C., Columbia—Provident Hospital
Hospital building; Southeastern Construction Co., Charlotte, N. C., Contr. 250,000
Tex., Corpus Christi—Neuces County Navigation District
Wharf construction; A. J. Rife Construction Co., Dallas, Contr. 341,000
Tex., Dallas—Southern Methodist University
Library; Manhattan Construction Co., Muskogee, Okla., (low bidder) 412,000
Tex., Houston—Rheem Manufacturing Co.
Plant additions; W. A. Brunet, Contr. 100,000
Tex., Houston—Treasury Department
Office building; James I. Barnes, Springfield, Ohio, Contr. 573,000
Tex., Sinton—San Patricio County
Road construction; Brown & Root, Austin, Cage Bros., Bishop Colglazier & Hoff, San Antonio, Holland Page, Austin, Contrs. 163,000
W. Va., Huntington—W. T. Grant Stores
Store improvements; Esch Construction Co., Cleveland, Ohio, Contr. 100,000
W. Va., Wheeling—Bloch Brothers Tobacco Co.
Warehouse Office building; Austin Co., Cleveland, Ohio, Contr. 200,000

Proposed Construction

Alabama—Alabama Rural Electrification Authority
Rural power lines $936,000
Ala., Birmingham—Jefferson County
Clinic 128,000
Ala., Gadsden—Etowah County
Bridge 163,000
Ala., Talledega—Talledega College
Library 130,000
Arkansas—First Electric Cooperative Corp.
Rural lines 190,000
Ark., Little Rock—State Highway Commission
Grade crossing program 1,787,000
D. C., Washington—Doctor's Hospital, Inc.
Hospital; Francisco and Jacobus, New York, Archts. 1,000,000
D. C., Washington—George Washington University
Library; school building 500,000
Fla., Hollywood—Hollywood Jockey Club
Race track 1,000,000
Fla., Tallahassee—Department of Justice
Prison; J. M. Shelton, Atlanta, Archt. 900,000
Fla., Tampa—American Can Co.
Plant addition 194,000
Ga., Savannah—City
Paving; A. S. Goebel, City Engineer 104,000
Kentucky—State Department of Welfare
Hospital; John T. Gillig, Lexington, Corresponding Archt., ... 2,150,000
Ky., Lexington—University of Kentucky
Science building; Elgin V. Farris, Engr. 210,000
La., New Orleans—New Orleans Public Service Inc.
Power station improvements 264,000
La., Shreveport—Southern Bell Telephone and Telegraph Co.
Improvements; Edward F. Neild, Shreveport, Assoc. Archt. for building 900,000
Md., College Park—University of Maryland
Buildings 545,000
Miss., Jackson—State of Mississippi
Road program 30,000,000
Miss., State College—Mississippi State College
Stadium, dormitory; Stevens and Johnson, Starkville, Archts. 150,000
Mo., Kansas City—Kansas City Terminal Railway Company
Bridge 400,000
N. C., Asheville—City
Municipal Auditorium; Lindsey M. Gudger, Archt. 150,000
N. C., Elizabeth City—Coast Guard
Air Base 1,000,000
Okla., Muskogee—Treasury Department
Post Office and Court House improvements 300,000
Okla., Tulsa—Board of Education
High School; Leon B. Senter and Joseph R. Koberling, Archts. 1,200,000
Okla., Tulsa—Rose Hill Cemetery
Mausoleum; B. Gaylord Noftsger, Archt. 250,000
Tenn., Clarksville—City
Waterworks; Thomas H. Allen and Robert H. Hoshall, Memphis, Consit. Engrs. 350,000
Tex., Benavides—City
Waterworks, sewers; Garrett Engineering Co., Houston, Engrs. 130,000
Tex., Corpus Christi—R and R Gulf Amusement Co.
Theatre; W. Scott Dunne, Dallas, Archt. 300,000
Tex., Dallas—Golman Baking Co.
Plant 200,000
Tex., Goldsmith—Phillips Petroleum Co.
Gasoline plant 1,750,000
Tex., Houston—Champion Paper and Fibre Co.
Plant enlargement; J. E. Sirrine and Co., Greenville, S. C., Engr. 1,500,000
Tex., Houston—Shipside Contracting Corp.
Wharf, warehouse 200,000
Tex., Houston—Hogg Estate
Building; Kenneth Franzheim, Archt. 200,000
Va., Roanoke—Hotel Roanoke
Addition 1,500,000
W. Va., Grafton—Resettlement Administration
School 225,000
W. Va., Romney—State Board of Control
Dormitory; L. D. Schmidt, Fairmont, Archt. 275,000

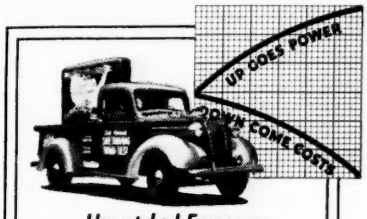
1937 CHEVROLET TRUCKS
and Commercial Cars



Fleet Owners buy Chevrolet Trucks because of bigger loads per trip—higher earnings per unit. They profit from Chevrolet's great pulling power and unmatched operating economy. There's a chassis size and a body style exactly suited to the most practical and economical handling of your haulage and delivery requirements.

General Motors Installment Plan—monthly payments to suit your purse.

CHEVROLET MOTOR DIVISION
General Motors Sales Corporation
DETROIT, MICHIGAN



Unmatched Economy Proved in 10,244-Mile
"RIM OF THE NATION" TEST RUN
With Half-Ton "Economy Model" Pickup—1,000-Pound Load

Location of Test	'Round the Nation, Detroit to Detroit
Distance Traveled	10,244.8 Miles
Gasoline Used	493.8 Gallons
Oil Consumed	7.5 Quarts
Water Used	1 Quart
Gasoline Cost	$101.00
Gasoline Mileage	20.74 Miles per Gallon
Average Speed	31.18 Miles per Hour
Running Time	328 Hours, 31 Minutes
Gasoline Cost per Mile	5.0098
Average Oil Mileage	1,365.9 Miles per Qt.
Total Cost of Repair Parts	$0.73

These records have been certified by the A.A.A. Contest Board as being officially correct.

PERFECTED HYDRAULIC BRAKES — NEW HIGH-COMPRESSION VALVE-IN-HEAD ENGINE — MORE LOAD SPACE — IMPROVED LOAD DISTRIBUTION — NEW STEELSTREAM STYLING — IMPROVED FULL-FLOATING REAR AXLE WITH NEW ONE-PIECE HOUSING (on 1½-Ton Models) — NEW ALL-STEEL CAB — PRESSURE STREAM LUBRICATION

"MORE POWER per gallon — CHEVROLET — **LOWER COST** per load"

IRON, STEEL AND METAL MARKET

June was an eventful month in the steel industry, marking the rise and decline of the C.I.O.'s effort to control the industry. As the month closed steel workers, who had been forced out of employment by the use of troops for the first time in the history of the country, were permitted to exercise their freedom and return to the mills.

Although the series of strikes, in more or less intensity in several districts, had been hampering operations in the steel industry for five weeks there had been no apparent lack of steel. Demand continued strong, but due to the first six months production which is near the record output of 1929, stocks were ample for the emergency caused by the forced closing of the mills. Approximately 28,800,000 tons of steel ingots and 19,800,000 tons of pig iron were produced up to July 1, as compared with 29,036,000 tons of steel ingots and 21,637,000 tons of pig iron made during the corresponding six months of 1929. No other six months period approaches these figures.

Despite the wave of strikes and the curtailed operations in several plants, the industry as a whole was operating over 75 per cent of capacity as compared with a little better than 70 per cent a year ago when there were no labor disturbances.

Steel production in the Alabama district has been steady at 96 per cent of capacity. The labor situation has been quiet and all of the state's 18 blast furnaces are operating. The 6th furnace at Ensley was blown in June 22 by the Tennessee Coal, Iron & Railroad Co., and with its two at Fairfield, make a total of eight in blast by the company, which is 100 per cent operation, the first time since 1928. The Sloss-Sheffield Steel & Iron Co. has four furnaces in service, the Republic Steel Corporation three and the Woodward Iron Co. three. Pig iron production in Alabama for the first five months of this year amounted to 1,080,000 tons. The total pig iron output in Alabama in 1936 was 2,061,000 tons, the best since 1929. Production and orders continue active with operations at peak. The Tennessee Coal, Iron & Railroad Co. reported employment was 16 per cent above 1929 and payrolls even higher.

Scrap iron shipments in the South have picked up following the lull of several weeks.

Structural steel demand has not increased and sales have slowed down because of higher wages and building costs. Although new orders for fabricated structural steel declined during May, based on the latest data available from the American Institute of Steel Construction, the total quantity booked during the first five months of 1937 was 16 per cent larger than for the same period last year. The May bookings were 50.8 per cent of normal (the yearly average 1928-31). The bookings for the five months period were 62.3 per cent of normal. Shipments for May were 53.9 per cent of normal and 52.3 per cent normal for the five months. The total shipments made by the fabricated structural steel industry were 14 per cent larger than for the same period last year. The tonnage booked by the industry in May was 118,842 and 130,714 tons were shipped. The tonnage available for future fabrication was 584,618.

In a report to the 6th Annual International Conference on Steel Development, V. G. Iden, Secretary of the American Institute of Steel Construction, said:

> "Coincident with the announcement of the Government of the United States that it will exercise greater economy and greatly curtail expenditures for public works, the structural steel industry is facing a decided improvement in the volume of business. This is further proof of the fact that government expenditures on made work have failed to demonstrate the practicability of effecting business recovery through extravagant use of the tax machine."

During 1936 the structural steel fabricating industry produced over 1,600,000 tons of fabricated structural steel, apportioned approximately 37 per cent to railway and highway bridges, 25 per cent into general building work, and 22 per cent into the erection of industrial plants. Only 3 per cent of the fabricated structural steel sold in 1936 is known to have gone into engineering projects, largely government work, the remaining 13 per cent constituted odd jobs, repairs, etc., all under 50 tons each.

Railroad buying is expected to stimulate steel demand. Over 300,000 freight cars are said to be obsolete and replacements requriements will average 80,000 cars a year for the next five years. The railroads have ordered 45,000 freight cars so far this year.

The Steel Corporation's 31,000,000 T.C.I. expansion in Alabama is progressing and the American Rolling Mill Co's. subsidiary the Sheffield Steel Co. is proceeding with a $2,000,000 development at Kansas City, Mo.

The Carnegie-Illinois Steel Corporation let contract for principal new mill equipment at its Irvin Works, Camden Hill, Pa., and a slabbing mill at the Edgar Thomson works, Braddock, Pa., to the Mesta Machine Co. and United Engineering and Foundry Co. both of Pittsburgh; the Continental Roll and Steel Foundry Co., Chicago, and the E. W. Bliss Co., New York.

The American Steel and Wire Company dedicated two new continuous rod mills at Joliet, Ill. They represent a part of the $5,000,000 project which includes improvements in the South Chicago and Gary billet mills, as well as wiremills in Illinois, and are capable of rolling the heaviest single bundle of No. 5 rod in the world.

PROMPT DELIVERIES FROM STOCK (Standard Sizes)

ORIOLE
GALVANIZED
STEEL SHEETS
Flat-Corrugated-Roofing

THE EASTERN ROLLING MILL CO.
BALTIMORE, MARYLAND
District Office, Petroleum Bldg., Houston, Tex.

Increase your profits with J&L STEEL

INSTANT STEEL SERVICE IS YOURS . .

J&L Warehouses fill your orders accurately . . . from complete stocks. You get prompt delivery of the steel you need.

from 4 J&L Warehouses

Steel users large and small find Jones & Laughlin Warehouse Service fast . . . economical . . . complete . . . dependable. You, too, will get steel *quickly* and in *ready-for-use form* from 4 J&L Warehouses serving the South.

J&L Warehouses, large and splendidly equipped for cutting, forming, welding, fabricating and handling, are located at New Orleans, Cincinnati and Pittsburgh. Practically all requirements for steel products can be met from the large and diversified stocks carried at these points.

The J&L Warehouse at Memphis operates a bar fabricating shop, and carries large stocks of oil country tubular goods, standard pipe, sheets, hot rolled bars, spikes and wire products.

The 4 J&L Warehouses serving the South prevent costly delays . . . save you time and money. For high quality steel products...order from your nearest Jones & Laughlin Warehouse.

SERVING THE SOUTH

SALES OFFICES:
Atlanta Cincinnati Memphis
New Orleans Philadelphia
Pittsburgh

WAREHOUSES:
Cincinnati Memphis New Orleans
Pittsburgh

JONES & LAUGHLIN STEEL CORPORATION
PITTSBURGH, PENNSYLVANIA

MAKERS OF HIGH QUALITY IRON AND STEEL PRODUCTS SINCE 1850

LUMBER NEWS OF THE MONTH

Forests in Land-Use Program in the South

THE agricultural possibilities of land-use under present practices are well-known. Less well-known are the possibilities of developing cash income and employment through the cultivation of timber.

Robert K. Winters, Forester and acting director of the Southern Forest Experiment Station, New Orleans, La., suggests two specific objectives with regards to forests: (1) to make the land produce continuously the maximum net cash income consistent with the long-time public interest, and (2) through such production to supply the maximum opportunity for employment.

The Southern Forest Experiment Station crews in 1934 took estimates of sample plots of forest land at 660 foot intervals, along compass lines 10 miles apart running from the Atlantic Ocean to the plains of Texas, and from the Gulf of Mexico to Southern Kentucky, including portions of Arkansas, Kentucky, Missouri, Oklahoma, Tennessee, Texas, and all of Alabama, Florida, Georgia, Louisiana and Mississippi.

Results of the survey show the following facts: forest land in this area represents 59 per cent of all land; farm land—35 per cent; and other land—6 per cent. That is to say: the area of forest land in the 31 survey units is nearly 1-2/3 times the area of agricultural land.

The following table shows graphically the contribution this vast forest area can make in the way of cash income to landowners:

Type of ownership and of timber	Land Value per acre	Value, land and timber per acre	Annual Income per acre
Small farm—loblolly pine	$3.00	$8.00	$.74
Small farm—bottom-land hardwood	3.00	10.00	.33
Large commercial—short-leaf, loblolly	3.00	16.00	.89
Large commercial—naval stores	3.00	11.00	.94

Incomes and values for small farm groups represent eastern Texas averages. Incomes and values for large commercial ownership in loblolly-short-leaf pine group are based on 300,000 acres of second growth in Arkansas.
Net income—gross annual returns less operating costs.

The examples in the table are taken from fields from second-growth sawtimber-size stands, as they now exist. At present these stands, particularly in the large-size classes, are understocked; in general they are not protected from fire, nor are they being cut in such a way as to insure a maximum timber growth. If they were fully stocked, and were properly cut and if the products were effectively marketed, net money yields per acre would reasonably be expected to double or treble, assuming present market conditions. On the average, as a result of improvement in management, hardwood stands can be expected to show a relatively greater increase in money yield than pine.

According to Survey studies of forest employment in the South, in cutting and manufacturing of timber products, the growth of each one and two-fifths average acres of second-growth forest land produces one man-day of labor. This employment includes (1) work in the woods, (2) cutting timber for any kind of industrial use, (3) all labor of transport of commercial logs, bolts, billets, and cordwood except that on common carrier railroads and barge-lines; (4) mill and office work in sawmills, pulp and paper mills, veneer, stave, creosoting and destructive-distillation plants.

In southern Texas, where there are 4,900,000 acres of pine timberland, this means, at 74 cents net yield per acre per year, $3,626,000 a year. Hardwood land, totalling approximately 1,170,000 acres, is, or can be, producing 33 cents net an acre, or annually a total of $386,000. Three-fifths of a man-day of forest industries per acre of forest land per year in this area is equivalent to 3,500,000 man-days of labor per year. At $1.25 per man-day this represents about $4,500,000 in wages. Under present economic conditions and with but slightly improved management practices, these 6,070,000 acres of forests could bring in more than $8,500,000 annually through the sale or use of trees on the stump, and through labor involved in harvesting, and manufacturing of products.

Southern farmers, by caring for their forests, by properly harvesting their own woodland products and by part-time employment on commercial forest land can materially increase their yearly cash income.

Forty per cent of the total farm area in the South is growing a timber crop, and an additional 24 per cent of all land in the survey area, not in use as farms, is producing timber.

Timberlands in Demand

TIMBERLANDS are beginning to attract attention again for the first time since the collapse of the Florida land boom in 1926 reports Forest Managers, Inc., consulting Foresters, Jacksonville, Fla. The market price of good producing forest lands went far below actual values.

Now forest products of all kinds are approaching record heights and the new demand for pulp wood which promises to reach large proportions in a few years is calling attention to the possibilities of profit presented by these lands. Prices are still low but the demand is increasing and the trend is definitely upward.

Taxes on forest lands have been going down for the past ten years and in most counties in north Florida and south Georgia are at the lowest level for the past twenty years. The trees have continued to grow regardless of the depression and the majority of properties, especially those protected from fire have a much better growing stock.

Lumber Sales

Lumber orders and shipments during June were under corresponding weeks of last year, but production has been running slightly ahead. Orders on hand at 124 mills reporting June 26 to the Southern Pine Association amounted to 71,776,000 feet, equivalent to 3,418 cars. Total stocks on hand June 26 at 115 reporting mills aggregated 424,793,000 feet, or 90 per cent of normal and less than 1 per cent above this time a year ago.

Office Furniture of Wood

A survey recently completed by the National Lumber Manufacturers Association, on office furniture in the United States, developed some interesting facts.

According to the survey, 75.6% of the $5,162,000 spent for office chairs goes for chairs made of wood. Of $8,203,000 spent for office desks and tables, 68.6% buys furniture made of wood. There is also shown a figure for miscellaneous office furniture of $5,138,000 of which 45.6% is spent for wood.

The survey points out that it is no longer necessary for the business executives to do without "real" wood-exterior filing cabinets which match his other fine furniture in the business offices. The latest development is a cabinet with an exterior of cored veneer stock with lightweight metal drawers. These cabinets are priced equal or slightly less than equivalent cabinets in other materials. The indication is that filing cabinet manufacturers in cooperation with the lumber industry will be producing the cheaper wood cabinets shortly along similar lines.

Sawmilling in Mississippi

In the June issue of the MANUFACTURERS RECORD an abstract of an address on sawmills in the South by Mr. E. L. Demmon, director of the Southern Forest Experiment Station, New Orleans, Louisiana, failed to mention the industry in Mississippi. Mr. Demmon's address included the following data on this important manufacturing activity in Mississippi.

The State has 2,015 saw mills, out of 8,112 mills located in the area surveyed by the Forest Station crews in 1934. This number is 20.4 per cent of the total number of mills of all types in the area. Of these 2,015 mills, pine saw mills number 1,597, and hardwood mills 418. Sixteen of the total number of mills in Mississippi have a daily (10-hour) capacity of 80 million board feet, or more. These 16 mills represent 10.8 per cent of all mills of this size in the survey area. Of mills of 40,000,000 to 79,000,000 board feet daily capacity Mississippi has 15; of mills of 20,000,000 to 39,000,000 board feet per day capacity, 109; and of mills capable of producing 1,000,000 to 19,000,000 board feet of lumber per day, 1,875.

AmCreCo products have maintained their same high standard for over thirty years. They are today, as in the past years, made of sound timber, treated with a wood preservative which is time tested and proven. The reputation of AmCreCo ties, piles, poles and timber will always be guarded by this same persistent policy. That's why their use is a definite guarantee of satisfaction.

AMERICAN CREOSOTING COMPANY

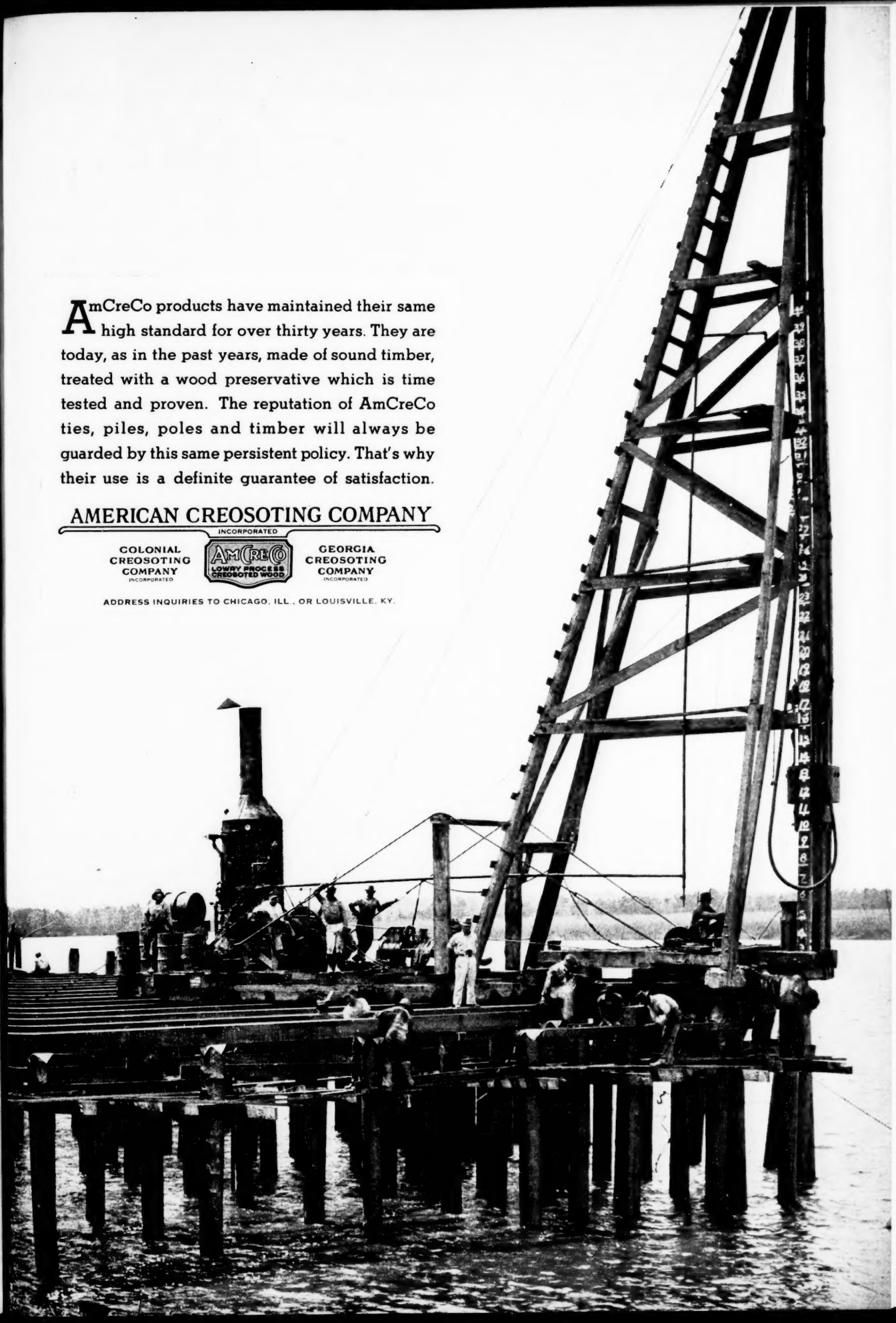
INCORPORATED

COLONIAL CREOSOTING COMPANY INCORPORATED

AMCREO LOWRY PROCESS CREOSOTED WOOD

GEORGIA CREOSOTING COMPANY INCORPORATED

ADDRESS INQUIRIES TO CHICAGO, ILL., OR LOUISVILLE, KY.



GOOD ROADS AND MOTOR TRANSPORT

Skyline Drive Nears Completion

Construction now in progress on 21 miles of road on the Skyline Drive south of Swift Run Gap, Virginia, leaves only 9 miles of this scenic route to be put under contract. Plans for this last section, to the north of Jarman's Gap, have been completed by the Bureau of Public Roads of the U. S. Department of Agriculture, which is directing the work for the National Park Service.

The Drive—from its northern end at Front Royal, to Jarman's Gap—is 96 miles long. The section completed from Front Royal to Swift Run Gap has attracted thousands of tourists from all parts of the East.

The Skyline Drive is being extended to the Great Smoky Mountains National Park in North Carolina and Tennessee by the Blue Ridge Parkway, 460 miles in length. Thirty miles of this parkway have been graded and surfaced with crushed stone but are not yet open to the public. Construction is in progress on an additional 104 miles on other sections of the parkway.

No Standard Method for Building Low-Cost Roads

Engineers of the Bureau of Public Roads of the United States Department of Agriculture declare there is no standard method of building low-cost roads, because methods used successfully in one locality may not be the best under different conditions. In building low-cost roads local material must be used or the cost will not be low, and wide variations in natural materials such as sand, gravel, topsoil, and clay make it necessary to adapt construction methods to the materials used. The stability or load supporting power of a low-cost surface depends upon the content of material that is not softened by water. Sand, gravel, cinders, slag and crushed stone all have this quality, but must either contain or have added to them a small amount of binder—clay most commonly. Only enough clay to hold the particles together should be used, as an excess of clay causes mud and rutting. Of a wide variety of mixtures which have been successfully used, many contain 70 to 80 per cent of hard particles with a clay binder. Engineers are further improving low-cost surfaces with bituminous materials, chemicals and other products. A good surface mixture with plenty of hard particles, either fine or coarse, is a first requirement. It is useless to treat a poor soil.

Virginia Farm Roads a Problem

In an address to county supervisors and officials meeting recently in Richmond for the annual convention of the League of Virginia Counties, Henry G. Shirley, Highway Commissioner, declared that the construction of "usable roads" in the farming areas is the most important problem of the highway department. Citing the need for good roads in these areas, Mr. Shirley declared that they should be so constructed that they may be used the year round for truck and automobile, since farmers in these localities have done away with horses and carriages. He added, however, that the large mileage of such roads in the state created a serious financial problem and asked the county officials for aid in its solution.

Oklahoma and Arkansas Highway Safety Laws

Enforcement of new national highway safety regulations in Oklahoma, as laid down by the Interstate Commerce Commission, will be started July 15, says J. M. Gentry, state public safety commissioner. The new rules are effective as of July 1, but Commissioner Gentry said patrolmen would issue warnings two weeks before starting to apply penalties. The rules require trucks, buses and truck trailers to carry extensive safety equipment, including fire extinguisher, three pot torches or red electric lanterns, two red cloth flags, spare light bulbs, and chains.

A new highway traffic code became effective in Arkansas on June 10 which prohibits hitch-hiking, requires a semi-annual inspection of all motor vehicles, and a stipulation that trucks must follow each other closer than 200 feet. All buses, trucks and trailers must be equipped with "clearance lights," presumably to eliminate the risk of "sideswiping," and all bicycles must have headlights and tail lights. The new regulations, it is thought, will have the strong support of careful motorists.

Haulaway Trailer Units

A new overall coordination between haulaway trailer units and tractor units has been achieved in the new fleet of haulaway trucks recently placed in operation at the Linden, N. J., plant of General Motors Corporation.

Powered by the economical Chevrolet Montpelier cab-over-engine conversion tractor, the new haulaway units are steamlined to conform with the lines of the Chevrolet tractor. Forty feet long, and 12 feet six inches high, the trailers carry four cars at a time, two in the enclosed bottom deck and two above. Officials of Whitehead & Kales, of Detroit, makers of the trailers, say they believe the units mark the first efforts to harmonize trailer-tractor units in design.

A special auxiliary 85-gallon gasoline tank is carried in each unit, and an emergency brake arrangement automatically sets the brakes on the trailer if it becomes detached from the tractor.

Public Roads Bureau Gives Course in Study of Soils

Soil testing has become of such importance in highway construction, and the demand for instruction in the work so great, that the Bureau of Public Roads finds it necessary to give to highway engineers in the public service a scheduled course in the study of soils. The first one began June 15 in the research laboratory of the bureau at Arlington, Virginia. Many engineers already have received instruction in methods developed in the laboratory.

The new knowledge concerning soils and how they act under different weather conditions is important in the construction of all types of road. The character of soil on which a road surface is placed is often as important as the type of surface itself. The soil expert is able to indicate the general character of surface needed to meet general soil conditions and to point out those places where poor soils must be removed or given special treatment.

A knowledge of soils and soil testing is particularly necessary in constructing low-cost secondary roads. There can be no single standard method of constructing soil, sand-clay, and gravel surfaces because of the variation in local materials. The engineer must adapt his methods to the materials at hand to obtain the best results. It can now be done with accuracy if the materials are tested in a soils laboratory and the knowledge gained by research is applied.

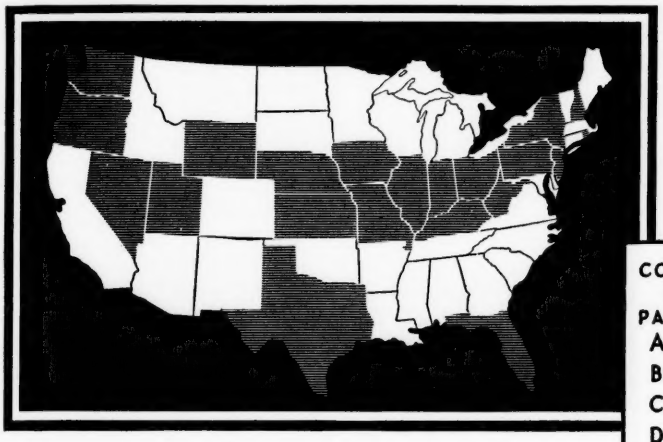
Interest Grows In Low-Cost Roads

Progress of several of the western states, notably Wyoming, in developing roads with limited highway income, is being watched by other states seeking to lighten the heavy tax burden on their motorist citizens, according to the American Petroleum Industries Committee. In Wyoming the stage construction method of road building lately has been highly developed. This method also is being adopted by numerous other states. At small cost, bituminous treatments are given a road each year. The road is improved immediately, being rendered dustless and mudless, and a substantial roadbed is built up as traffic increases. As the bituminous pavement thickens and improves, maintenance costs decline.

House-Trailer Production

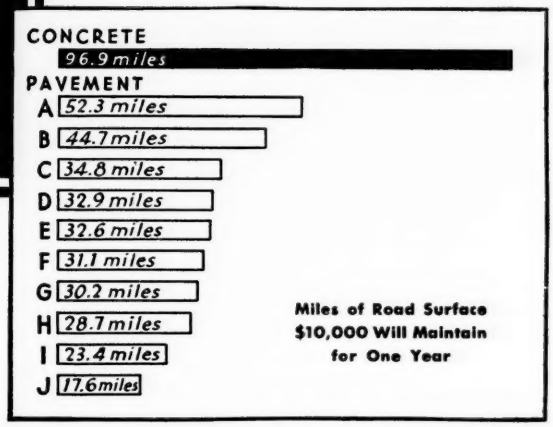
The production of automobile house trailers for 1937 will reach a total of 112,500 units, according to estimates presented in House Trailer Red Book, published by the Carrier Press, Chicago. These figures were obtained from business data presented for more than 325 house trailer builders throughout the United States. The total of 112,500 trailers includes about 95 per cent of the output of all production and custom builders of the country.

THE MAINTENANCE RECORDS *Speak!*



Official records from the states shown in gray are the basis for the Portland Cement Association's newest summary of surface maintenance costs.

To concrete's overwhelming public preference; to its greater load-carrying capacity per dollar of first cost; to its non-skid, highly visible "safety" surface, add this record of maintenance economy as one more reason for building your roads of concrete.



Concrete saves $88 to $465 per year per mile in surface maintenance, according to most complete summary ever published

What percentage of future road funds must be earmarked for surface maintenance?

How much will be available for urgently needed new construction?

Additional light is thrown on these fundamental questions by a new summary of surface maintenance costs, just published by the Portland Cement Association. This comprehensive study includes all states which release upkeep costs in sufficient detail so that surface maintenance costs can be segregated. There is no selection or exclusion of data.

All Available Records Included

The summary is based on detailed surface maintenance figures from official records of 21 state highway departments. Figures include the latest and all records available.

The periods covered in the various states range from 2 to 16 consecutive years, averaging about 9 years.

134,856 miles of state highways are included—nearly half of the surfaced mileage of state trunk systems, representing a wide range of traffic, subgrade, climatic and other conditions.

Concrete's Economy Clearly Shown

Average surface maintenance costs on 49,000 miles of concrete (over 321,500 year-miles of maintenance) were found to be $103.17 per mile per year.

The average cost on the next lowest paving material was $191.09, nearly double the cost on concrete. This was on a small mileage, much of which was comparatively new. The average surface maintenance cost on all surfaces other than concrete was $359.89, three and one-half times that on the concrete.

Here are the actual figures for the principal road types:

Type of Pavement	Total Mileage	Aver. Surface Maintenance Cost Per Mile Per Year
Concrete	49,336.8	$103.17
A	2,183.4	191.09
B	1,135.5	223.47
C	2,284.3	287.70
D	20,566.9	304.32
E	25,961.2	306.83
F	11,831.4	321.92
G	1,838.2	331.52
H	3,023.6	348.02
I	7,778.9	427.17
J	4,770.4	568.32

Mail the coupon or write for detailed figures.

PORTLAND CEMENT ASSOCIATION
Dept. 7-21, 33 West Grand Avenue, Chicago, Ill.

Please send me, "Road Surface Maintenance Costs from 21 States."

Name _____

Address _____

City _____ *State* _____

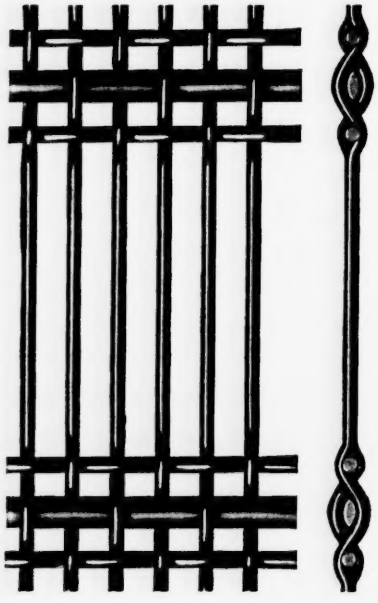
NEW WAYS OF DOING THINGS

Welded Steel Truck Bolster

Technologists of United States Steel Corporation Subsidiaries seem to have solved the baffling problem of devising a satisfactory rolled and welded steel truck bolster for railroad rolling stock, according to a report of the subcommittee on car construction of the Association of American Railroads. The report approved the use of 50 sets of the new bolster, asserting that this limited usage, until the bolsters had been given a thorough trial in regular use on the railroads, was agreeable to the manufacturer. Twenty-five of the new installations will go on cars of the Pennsylvania Railroad and the remainder on ore and coal cars of the Bessemer & Lake Erie Railroad.

STA-TRU Woven Wire Screens

Announcing further improvement in the weave of their newly developed STA-TRU long mesh woven wire screen, the Ludlow-Saylor Wire Company of St. Louis, Mo., declares that the screen will not stretch under tension. The STA-TRU was developed with a straight stay-rod woven into the transverse members of the fabric to eliminate the fault inherent in ordinary crimped wire screens of stretching under tension applied by many vibratory screening machines. Of oval stay-bar weave, wires have been relieved of crimping strains, so that vibration has no destructive effect on the structure of the metal in the wires. Tensioning members of the screening equipment, moreover, exert their pull exclusively on the straight, uncrimped oval-section stay-bars of high tensile strength, which are woven into the screen in combination with the crimped transverse wires. This construction maintains the longitudinal screening wires in their proper relationship.



Jeffrey Single Roll Crusher

Specially designed for the preparation of stoker or smaller size coal with a minimum of degradation and oversize, a new single-roll crusher is announced by Jeffrey Manufacturing Company, Columbus, Ohio. Its renewable segments carry thin, sharp pyramid and spear-point teeth, also insertable "Wejtite" feeder teeth for use where reduction of large coal is desired. With the pattern of their spacing, these teeth minimize the degradation by causing a piercing action rather than a smashing action. A new breaker plate design eliminates boiling of the feed and therefore increases capacity, while an extended shoe carries the business zone farther along the roll to minimize oversize. These new features are also obtainable in replacement parts for change-over of earlier type Jeffrey single-roll crushers.

The Nickel-Copper Alloy "K"

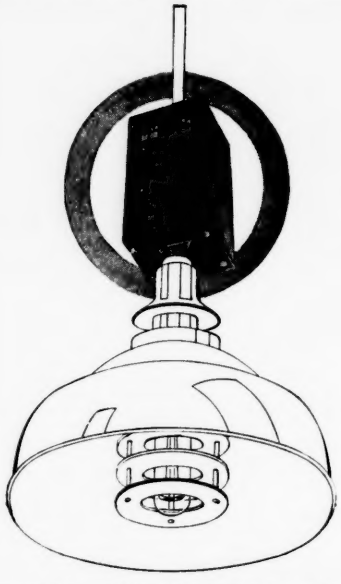
To meet a broad engineering requirement of great strength combined with high resistance to corrosion, The International Nickel Company of Canada, Limited, Copper Cliff, Ont., has developed the Nickel-Copper alloy "K," which offers, in addition to high non-corrodibility, great strength and other physical properties associated with alloy steel. It is non-magnetic and, like steel, may be hardened or softened by heat treatment, and can be readily forged, machined or welded. Selected by the United States Government for valve stems used in the Tygart River Dam in West Virginia, it is also largely used in oil fields for valve balls and seats in deep well pumps operating under high corrosive and abrasive conditions. Other uses are for ball bearings, pump rods, etc.

Motosteel Evenaction Lever Motor

Uses to which pneumatically operated lever motors are applied are more or less restricted by their non-uniform operating characteristics. The Taylor Instrument Companies, Rochester, N. Y., have designed and constructed the Motosteel Evenaction Lever Motor specifically to overcome traditional shortcomings of this type of device and to give it a much broader field of operation. Outstanding features of the new motor lever are: All-steel welded construction for strength, lightness of weight and permanency of alignment; precision operation characteristics to insure a uniform relation between the air pressure applied to its diaphragm motor and the resulting lever travel throughout its stroke, in addition to other important phases of design and construction. Design and operating features of the new level motor recommend it for the operation of dampers, lever operated valves, butterfly valves, electrical rheostat for variable speed motors, for the control of electrical equipment, or for the operation of any device by the conversion of pneumatic energy to linear or angular mechanical motion.

High Intensity Mercury Vapor Lamp Transformer

Designed to provide greater lighting efficiency and better seeing illumination, when used with proper high intensity lamps, a new high intensity mercury vapor lamp transformer has been introduced by The Acme Electric and Manufacturing Company, Cleveland, Ohio. To produce this transformer, Acme engineers developed entirely new methods, even discarding standard materials



heretofore used in this type of construction. As an example, special core manufacturing methods were created which included the use of extremely thin laminations of high silicon steel. This, with the use of oversize wire for all coils, helps largely, it is claimed, to insure cool operation of functioning units. In addition, coils are precision wound and are of the armored insulation type, doubly impregnated. Other important features of the Acme transformer are its universal mounting features and its two positive contact universal terminal panels each mounted in a large compartment.

Aluminum Shovel

An aluminum coal shovel, weighing about 2 pounds less than the ordinary shovel, has been developed by a coal miner in the Pennsylvania coal district. Although this tool costs more the miners feel that its light weight repays them for the added expense. If they move between 15 and 25 tons of coal a day, as most of them do, they like to be sure of the efficiency of their shovels. A lighter shovel means less work, reasoned Thomas Telford, and so he developed an aluminum shovel to aid him in his labors at the Allegheny-Pittsburgh Coal Company, Logans Ferry, Pa. They were made by the Wood Shovel and Tool Co., Piqua, Ohio.

no blocked condensers

You can't block the water-cooled condensers in Westinghouse Water Coolers. Dust, dirt, lint or other solids, inevitable in many manufacturing operations, can't stop these condensers . . . can't reduce your supply of properly cooled water . . . can't build up big cleaning or repair bills.

Other advantages that account for the wide dominance of Westinghouse Hermetically-sealed Water Coolers, for industrial and office use, are:

Hermetically-sealed units . . . lifetime lubrication.
Air-cooled or water-cooled mechanisms.
Brushless motors that won't burn out.
Improved Dual-action evaporators.
Non-clogging drains . . . sanitary bubblers.
Freon refrigerant . . . temperature selectors.
Westinghouse 5-year protection plan.

Yet Westinghouse Hermetically-sealed Water Coolers, with all these money-saving advantages, cost no more. See your local dealer, or write to Department 788, Westinghouse Electric & Manufacturing Company, Mansfield, Ohio.

Westinghouse
Hermetically-Sealed
WATER COOLERS
Freeze-proof and explosion-proof models for special applications

REMEMBER . . . WESTINGHOUSE GIVES YOU BOTH HERMETICALLY-SEALED UNITS AND THE 5-YEAR PROTECTION PLAN

The VOICE of ACI

Speaking for Appalachian Coals, Inc., marketing agency for the finest bituminous coals in the world, the Voice of ACI spoke to thousands of retail coal merchants and domestic consumers during the recent successful "American Coal Week" in Chicago.

The Voice of ACI said, "ACI Quality Coals have gained national recognition for their purity . . . economy of use . . . and steady demand."

Concluding, the Voice of ACI said, "Watch for the ACI trademark. It is becoming as well known as the seal of approval of the Good Housekeeping Bureau, the emblem of General Motors, the insignia of Heinz or Del Monte. The ACI trademark stands for Stability, Quality and Service.

"When you buy from an ACI mine of eastern Kentucky, eastern Tennessee, southwestern Virginia or southern West Virginia, you can be absolutely certain of receiving full value. You can be sure of your money's worth."

Write to the ACI headquarters in Cincinnati for lists of producers and agents.

Appalachian Coals, Inc.
TRANSPORTATION BUILDING · CINCINNATI, OHIO

THE ESTABLISHED POLICY

of this Bank is to cooperate with meritorious Business.

Correspondence invited

BALTIMORE COMMERCIAL BANK

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Member Federal Reserve System
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FOR BUSINESS EXECUTIVES

A daily financial newspaper edited to save precious time.

The WALL STREET JOURNAL
44 BROAD ST.,
NEW YORK, N. Y.

Published by Dow Jones & Co., Inc.

FINANCIAL NEWS

Progress

IN this period of what someone has called "alarmed prosperity," production figures show continued increases with the exception of, what is hoped to be, a temporary slowing down of industries affected by strikes. The situation in the C. I. O. strikes as this is written has calmed to some degree.

Taken as a whole the country is looking forward to good harvests and increased earnings on the part of business enterprise. The South particularly is showing such definite advances in the establishment of new and important undertakings in most of the Southern states that in spite of disturbing factors—increasing government debt, higher taxes, threats of labor troubles to come, legislation that is unfair to business—the demand is such that production is likely to be maintained and increased.

The South has been comparatively free from labor difficulties. It is not believed that outlaw methods of intimidation will make much headway in the Southern states. The population here being so overwhelmingly American, with only a small admixture of foreign stock, opposes naturally the wild and absurd methods of Russia which have gained support in some Northern industrial centers. The appreciation of this is shown by investors and manufacturers from other sections who are locating in the South. As we are pointing out elsewhere in the list of industries established in the last six months, they are aware of these conditions and are proceeding accordingly for the safety of their investment and a better outlook for progress.

As has been said before in the MANUFACTURERS RECORD, there is every reason why our Southern lawmakers should see to it that every reasonable encouragement is offered industry. Not only is it a major factor in progress but as a source of revenue and from every standpoint it should have encouragement within proper bounds instead of discouragement.

The Tax Dollar

WITH the increase in expenditures of all government units, Federal, state and local, taxes are steadily rising. According to the National Industrial Conference Board, which gives the figures for the fiscal year of 1935, constituting the latest complete data available, tax collections aggregated in that year 17.7 per cent of national income. For the four years from 1932 to 1936, there was an estimated increase of 37 per cent in the cost of government in the United States. From 1922 to 1929 money for tax purposes averaged 12 per cent.

The Budget

SENATOR Carter Glass in the debate on the Robinson amendment, which was aimed to cut 25 per cent off the $1,500,000,000 relief bill, stated: "I feel so intensely that the Congress of the United States is precipitating this country into actual bankruptcy with its extravagence that I am utterly opposed to the whole business and shall vote against it." His reference was to lump sum relief appropriations.

Notwithstanding the objection of Senator Glass and others, the measure was passed. Senator Glass emphasized that the national debt is nearer 40 billion than 36 billion, and asked the question "Who is to pay for it? Are we to repudiate the na-

(*Continued on page* 52)

One of a Series, "A Five-Year Record"

A NEW "SERVICE CITY" AS BIG AS BUFFALO

More than 153,500 customers and their families were supplied with Associated services for the first time during the past five years.

If they all lived in one spot, they would make a city as big as Buffalo, Milwaukee, or San Francisco.

Of the 1,830,000 total now served, about 58% are concentrated in the three important industrial States of New York, New Jersey, and Pennsylvania.

In none of these five years was there a loss in customers. As additional thousands demanded service they always found adequate facilities awaiting them, although it was hard during these depression years to find funds for needed new construction.

Constant Increase in Customers Served

1932	1,677,000
1933	1,678,000
1934	1,720,000
1935	1,764,000
1936	1,831,000

ASSOCIATED GAS & ELECTRIC SYSTEM

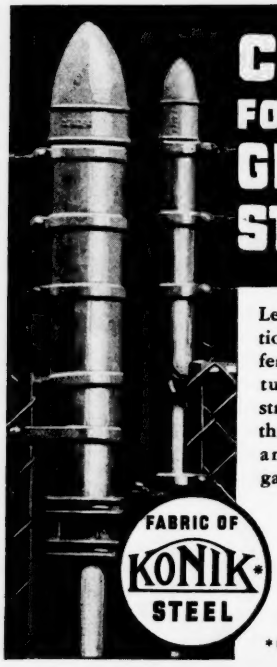
Industrialists in the area we serve, whose increased steam needs have required improvement of steam generating equipment, are using

NATURAL GAS

Natural gas can be applied, at lowest first cost, to the latest design of steam generators, or used to increase capacities, and efficiencies of older installations. Operating expenses with natural gas are always lowest.

SOUTHERN NATURAL GAS CO.

Watts Building — Birmingham, Ala.



CHOSEN FOR ITS GREATER STRENGTH

Leading industries and institutions are choosing Continental fence because of its long life features:—KONIK steel fabric, stronger and rust-resistant clear through . . . Heavier posts, rails and bracings . . . Improved gate hinges. Get new manual, "PLANNED PROTECTION", free on request.

FABRIC OF KONIK* STEEL

CONTINENTAL STEEL CORP.
Kokomo, Indiana
Plants at Kokomo, Indianapolis, Canton

* U. S. Patent No. 1874814.

CONTINENTAL
Chain Link FENCE

1937 Body
1890 FINISH

Do Your Packages
LACK
The Same Co-ordination?

The 1937 figure is the same as always, though the dress may be different. Your product may be of the same quality as ever, but your package may be out-dated in appearance and the public may not realize the true worth of what's inside.

Give your packaging the proper co-ordination of quality plus modern dress. And if you will adopt a distinctive style of color and design, it will actually increase sales. Especially if you have several products, should the packages all be co-ordinated for identity, and advertising of each other.

May we make some "Co-ordinated Packaging" suggestions? No obligation!

OLD DOMINION BOX CO., Inc.
LYNCHBURG, VIRGINIA
Winston-Salem, N. C. Burlington, N. C. Asheboro, N. C.
Pulaski, Va. Martinsville, Va. Charlotte, N. C. Kinston, N C.

Old Dominion Paper Boxes

Financial News

The Budget

(*Continued from page 50*)

tional debt or are we to pay the national debt at maturity and as it matures?"

Notwithstanding the explanations which have been volunteered as to the "normal" budget being nearly balanced, it is quite apparent that for all essential purposes we are as far away as we have been from the all-important question of getting the budget balanced. There is no use in blinking the fact that the question is well to the front in the minds of people who are concerned about the credit of the American government. It is a question of the utmost importance which will not down until a definite effort is manifested to cut down expenditures, to do away with a large part of the expense of the government machine with its huge army of jobholders and unnecessary bureaus.

Government expenditures during the past fiscal year have gone beyond $7,000,000,000. It was not so long ago when the so-called extravagance of the first "billion dollar Congress" brought widespread protests from the country.

Tax Hungry

THE Dallas *News* suggests that abrogation of the Texas Community Property law by the Federal Government in any respect would violate the treaty of annexation and this further attempt of the New Deal to undermine the sovereign powers of the State must be turned back in Congress. Under this law husband and wife may make separate income tax returns. The surtax on large incomes is thereby lessened and the Treasury Department doesn't like it.

Improved Railroad Service

THE Association of American Railroads calls attention to the remarkable record of safety attained in railroad travel. "On the basis of the average record for the past seven years, a passenger could have traveled more than 2,560,000,000 miles without meeting death in a train accident." Improvements and care in operation brought this about. "In the old days there were 56 sizes and kinds of axles for freight cars—now there is one standard design. There were 20 different kinds of brake shoes—now there is one standard design. There were 26 kinds of car couplers, which have given place to one standard pattern."

A year or two ago the Class I railroads of the country broke all records for similar periods in not causing the death of a passenger throughout the year. This is the more remarkable when the demand of the public for constantly higher speed is taken into account. The carriers are meeting the public demand for comfortable, rapid transportation in a gratifying way. The day of the stuffy, cinder-filled, jerky ride has almost disappeared. Stations, rails, motive power, practically everything contributing to passenger comfort and convenience, have undergone great changes. The result is shown in the activity at the ticket office.

Steel Preferred Dividend

WITH the payment of a dividend of $2.00 a share on preferred stock of the U. S. Steel Corporation, arrearages on this standard investment have been reduced to $1.25 a share. From the time the company was formed it paid dividends on preferred uninterruptedly until the latter part of 1932, when the rate was reduced. "As the steel industry goes so goes business" is axiomatic, and the comeback of this leader in industry with the earnings now being shown, taken with the prospects for future months, is a matter for congratulation.

The Arundel Corporation

BALTIMORE, MD.

Constructors and Engineers

Distributors of Sand-Gravel-Commercial Slag

A COMPLETE ORGANIZATION

Our complete organization with years of experience in successfully executing large construction contracts of various kinds is prepared to undertake the construction of earth, masonry and concrete dams, drydocks, dredging of all kinds, river and harbor improvements, deepening channels, hydraulic filling and rock work, tunnels, railroad construction, sewers and waterways.

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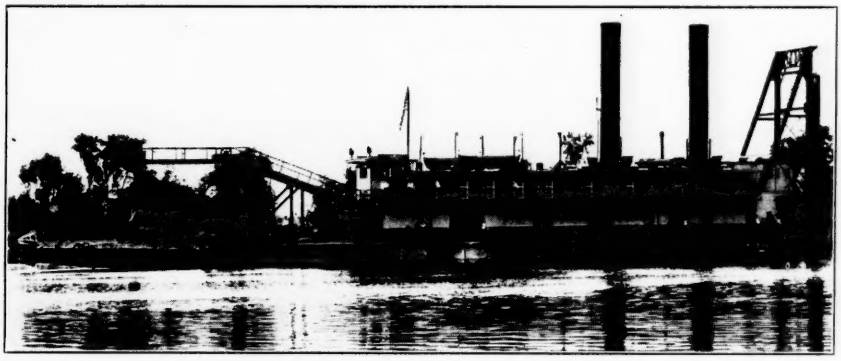
DREDGING

FILLING, LAND RECLAMATION, CANALS, PORT WORKS
RIVER AND HARBOR IMPROVEMENTS—DEEP WATERWAYS AND SHIP CHANNELS



We are especially equipped to execute all kinds of dredging, reclamation and port works in Southern waters.
Correspondence invited from corporate and private interests everywhere.

Contractors to the Federal Government

ATLANTIC GULF AND PACIFIC CO.

NEW YORK: 15 Park Row HOUSTON, TEXAS: Scanlan Building

INDUSTRIAL NEWS

Rust Engineering Company Contract

The Rust Engineering Company, Pittsburgh, Pa., has been awarded contract for the design and construction of two reinforced concrete carbon black storage bins for Cabot Shops, Inc., Pampa, Tex. The bins will be 150 feet high, 40 feet in diameter, with 8-inch walls. Construction will start at once.

Woodward Replaces Coke Oven Equipment

To replace present equipment on a battery of 38 coke ovens at its plant at Woodward, Ala., the Woodward Iron Company has placed an order with Semet-Solvay Engineering Corporation, New York, for a collector main, equipped with liquor-sealed uptake valves. A carefully designed spray system prevents the collection of tar deposits.

New Industries For Mississippi

New industries employing 2500 workers and having annual payrolls of $1,500,000, with $5,000,000 worth of taxable personal property, have been assured for Mississippi during the five and one-half months' active life of the State Industrial Commission, according to Chairman Harry O. Hoffman. Up to now the Commission has investigated 58 communities desiring to locate an industry and has approved 8 of those making application.

Dramatizes Lubrication in Modern Industry

Representing one of the most comprehensive studies of its kind ever attempted, a motion picture dramatization of lubrication methods in modern industry was shown for the first time recently in the preview theatre of Radio City Music Hall, Rockefeller Center, New York. The new film is done in the "March of Time" style, and is called "The Inside Story." Witnesses of the first public screening were guests of P. M. Gordon, Manager of the Industrial Department of Socony-Vacuum Oil Company, Inc., New York, producers of the picture.

Carborundum Band At Great Lakes Exposition

Heard over the air waves for the past eleven years, the well known Carborundum Band of sixty pieces under the direction of Edward D'Anna, has been invited to appear at the Great Lakes Exposition at Cleveland, Ohio, for concerts on the afternoon and evening of July 24 which will be known as Carborundum Day at the Exposition. It is expected that one or both of the programs will be broadcast and Francis D. Bowman, advertising manager of The Carborundum Company, Niagara Falls, N. Y., who has written, produced and announced the Carborundum radio programs since their inception, will be at the microphone. The band will be accompanied by a group of company officials, including Dr. Frank J. Tone, president; G. R. Rayner, vice president; F. H. Manley, treasurer; Charles Knupfer, general sales manager, and Arthur Batts, secretary. A party of department heads, sales representatives and employes will also attend.

Oles Envelope Celebrates Anniversary

The Oles Envelope Corporation, Baltimore, Md., celebrates its silver anniversary. "The years," says the company publication, "have been mighty kind to us. This business has plowed its way through the great era of prosperity and through the bleakest period of depression. Yet we have gone consistently forward—clinging steadfastly to ideals."

Heating and Ventilating Exposition

The Manufacturers Record, in its June edition, carried an announcement that the Fifth International Heating and Ventilating Exposition would be held at Grand Central Palace, New York, January 4 to 8. It is now officially stated that the dates will be January 24 to 28. Charles F. Roth, with executive offices at Grand Central Palace, will be in direct charge of the Exposition.

Judging by the calibre of exhibitors and their number, the event should be the most successful in the series of these expositions which have been held in alternate years and in leading cities. For this year's showing three floors of Grand Central Palace have been reserved and at this time, seven months in advance of the opening date, all available exhibit space on the first two floors has been sold. Contracts covering one-third of the third floor space have been made with exhibitors.

Appoint Chattanooga Distributor

Eckerly-Johnson Company, Broad and 13th Streets, Chattanooga, Tenn., has been appointed distributor in the Chattanooga district of the complete line of mechanical rubber goods manufactured by the New York Belting and Packing Company, Passaic, N. J.

Monsanto's Tennessee Plant Operating

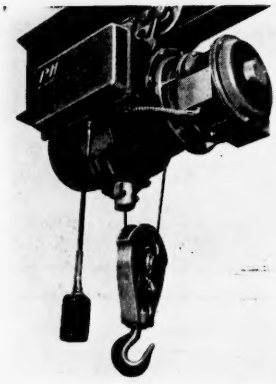
The first electric furnace at Monsanto Chemical Company's new phosphate plant at Monsanto, Tenn., has begun operations satisfactorily, it is announced, and the second and third furnaces are scheduled to begin production soon after the first of July. These furnaces are declared to have the largest capacity of any yet constructed in this country, the plant representing an investment of more than $3,000,000. Principal offices of the company are in St. Louis, Mo.

Takes Over Maris Brothers Plant

G. A. Whitehead, Philadelphia distributor of Owen Clamshell buckets and grapples, has purchased the entire business of Maris Brothers, Inc., manufacturers of cranes and hoists for the past fifty years at 56th Street and Grays Avenue, Philadelphia, Pa. He will continue the manufacture of cranes and hoists, operating the plant in connection with his clamshell bucket business.

(*Continued on page 56*)

STEEL *from* TROLLEY *to* HOOK



You're sure of long, dependable service with these husky P&H Hoists. There's not just a steel member here and there, but steel throughout . . . wheels, trolley sides, suspension members, cable, lower blocks, hooks . . . and inside, accurately machined gears are carried on husky shafts of alloy steel. Here's modern design not duplicated by any other hoist.

Write for this New Hoist Catalog

In this new bulletin you'll find the answers to many of your handling problems. There's complete information on sizes, types and a host of applications — suggestions that may save you hundreds of dollars from present costs. Ask for Bulletin H-5. Address the Harnischfeger Corporation.

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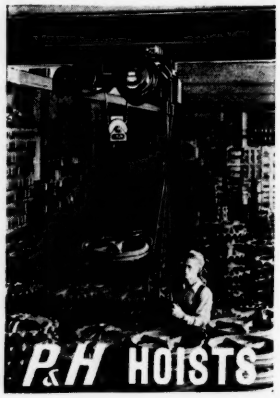

Handle it "*Off the Floor*" with

HARNISCHFEGER CORPORATION

HOISTS · ELECTRIC CRANES · P&H WELDING · MOTORS · ARC WELDERS · EXCAVATORS

CORRUGATED
STEEL SHEET PILING

Strong • Lightweight • Watertight

Extensively used for Bridges, Dams, Locks, Sewage Disposal Plants, Docks, Levees, Etc. Can be driven by hand, air or steam hammer.

Specified and used on Federal, State, County and City work.

STANDARD *Send for New Catalog* INTERLOCK

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228 N. LASALLE ST. CHICAGO, ILL.

NORFOLK TANK CORPORATION
NORFOLK, VA.
Baltimore Rep: Allan U. Bevier, Inc., 322 S. Fremont Ave.
STEEL PLATE FABRICATORS

TANKS:		Standpipes	Angle Rings
Pressure	Water	Bins Hoppers	Dredge Pipe
Truck	Process	Stacks	Asphalt Equipment
Trailer	Storage	Pipe Coils	Industrial Specialties

STEEL PLATE CONSTRUCTION
TANKS STACKS DREDGE PIPE

Acid Tanks	Digestors	Jacketed Tanks	Settling Tanks
Breechings	Dryers	Molasses Tanks	Standpipes
Condensers	Filters	Oil Storage Tanks	Stills
Coolers	Gasoline Tanks	Pressure Tanks	Vacuum Tanks

LANCASTER IRON WORKS
LANCASTER, PA.

SEWER PIPE
CULVERT PIPE
DRAIN TILE
WALL COPING
METER BOXES

LEE CLAY PRODUCTS CO. LEE CLEARFIELD, KY.

FLUE LINING
SEPTIC TANKS
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GRATE BACKS
FIRE CLAY

We solicit your inquiries

LEE CLAY PRODUCTS COMPANY
CLEARFIELD, Rowan County **KENTUCKY**

Water Purification Plants
Any Type—Any Purpose—Any Capacity

Dry Chemical Feed Machines
Swimming Pool Filters

E. W. BACHARACH & CO.
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FILTERS
Water Filters for Municipalities, Textile Finishing Establishments, Rayon Manufacturing Plants, Swimming Pools, Raw Water Ice Plants, Laundries, etc.

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Filtration and Pumping Equipment
For Water Works and Swimming Pools
Sales and Installation
BURFORD, HALL AND SMITH
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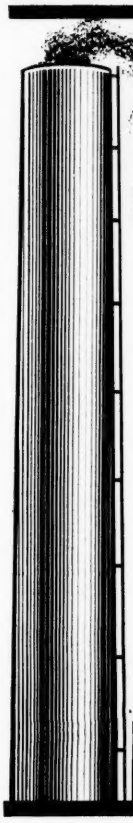
Atlanta, Georgia



SMOKE STACKS

Another Cole Product

Our various fabricated C O L E steel products also include Smokestacks and Standpipes and you'll find them to stack up to your needs in every way. These stacks made to specification from your designs or ours, which our Engineering Department will gladly furnish. Put your Stack—also stack of problems—up to us.

OTHER COLE PRODUCTS ARE:

Tanks and Towers
Bins and vats
Kettles and Kiers
Boilers and Engines
Air Receivers
Nickel-clad and Stainless Steel Vessels
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Heavy pressure vessels
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Write for "Tank Talk"—No. 9-D.

Tank Builders For Over 80 Years!

R.D. COLE MFG.CO.
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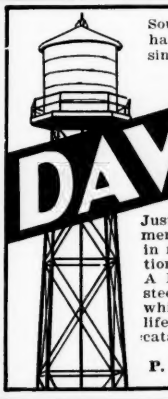
SOUTHLAND PRODUCTS
—WELDED OR RIVETED—

We now manufacture and offer to the trade tanks in all sizes for pressure or gravity work. Also other steel equipment of either

WELDED OR RIVETED CONSTRUCTION
This applies to field as well as shop built equipment

Write us for information and quotations

Chattanooga Boiler & Tank Co.
CHATTANOOGA, TENN.
TANKS



Southern factories and railroads have installed Davis Tanks since 1888.

DAVIS CYPRESS TANKS

Every Davis Tank embodies the accumulated technical skill of forty-six years of tank-building.

Just as cypress is without superior for investment economy, so are Davis Tanks unsurpassed in material, method of construction and reinforcing for service. A Davis water tank on a Davis steel tower, are plant purchases which have almost no limit of life and usefulness. Ask for new catalog of sizes and capacities.

DAVIS CYPRESS TANKS

G. M. DAVIS & SON
P. O. Box 5, Palatka, Florida

INDUSTRIAL NEWS

(*Continued from page 54*)

Brown Purchases Corley Lumber Company

Change in ownership of the J. P. Corley Lumber Company of Manchester, Ga., has been effected by the purchase of all outstanding stock by S. S. Brown, president. The business was established in 1908 by J. P. Corley, and was incorporated in 1930. Mr. Brown joined the company in 1922 and was elected secretary and treasurer in 1930. He became president in April of this year, succeeding Mr. Corley. Mr. Brown is also president of the Meriwether Federal Savings & Loan Association of Manchester.

New Firthite Firthaloy Sintered Carbide Plant

The recent opening of the new Firthite Firthaloy sintered carbide plant of the Firth-Sterling Steel Company, McKeesport, Pa., marks the tenth anniversary of the company's first experience with this unusual form of metal for many machining applications requiring special steel. Development and manufacture of the product have involved patient research. The new building has been designed to permit efficient and orderly production and the elimination of wasteful handling of materials and time losses, while departments have been equipped with the most modern machinery. In its construction, the latest materials for industrial building have been used, including aluminum, glass, brick, stainless steel, cork, wood block flooring. Carrara glass walls—all to provide the best possible working conditions and to insure absolute cleanliness of the product.

Welding Research

Completion of 10 fundamental welding research projects, part of a broad program to improve welding methods is reported by the welding research committee of the Engineering Foundation, New York. Digests have been made of the results of these projects.

Industries cooperating are the machine, pressure vessels, gas welding and supply, railroads, public utilities, steel, structural steel fabrication, resistance welding, arc welding, and arc welding apparatus and supply. A fellowship has been established at Cornell University by the Structural Steel Research Committee for the study of fatigue of welded joints.

Shutter Covers for Escalators

Most building codes and regulations of labor departments, as well as insurance rulings, require that vertical shafts such as escalators be enclosed and protected by fire doors. This means an expensive and awkward kiosk at each floor which interferes with a full view of the floor, merchandise and counters in the store. To overcome these disadvantages, Cornell Iron Works, Inc., Long Island City, N. Y., has introduced fireproof shutter covers for escalators which coil on a horizontal shaft in the rear when open. They pull shut by cables, using a detachable hand crank on a drum, also located in the rear, and may be made to close automatically in case of fire by means of a fuse link releasing a closing weight. The speed of closure can be controlled by a governor when desired, and the cover may also be operated electrically.

TRADE LITERATURE

ROBBINS ELIPTEX SCREENS—
Bulletin No. 99-A—illustrating and describing the Robins Eliptex screen for horizontal installation.
Robins Conveying Belt Company, New York City.

INDUSTRIAL AIR FILTERS—
Booklet—Air-Maze Industrial Air Filters, newly developed Oil Bath type.
Air-Maze Corporation, Cleveland, Ohio.

REFRIGERATION—
Bulletin 200-D—the new Frick purger for refrigerating systems using either ammonia or Freon-12;
Bulletin No. 234—official Frick publication devoted to Evaporative Condensers for ammonia and Freon-12 refrigerating systems;
Bulletin No. 512-B—listing theatres, hotels, restaurants, stores, hospitals, offices, industrial plants and other structures using Frick refrigeration for air conditioning.
Frick Company, Waynesboro, Pa.

DRINKING FOUNTAINS—
Booklet—Halsey Taylor drinking fountains and water coolers.
The Halsey W. Taylor Company, Warren, Ohio.

"CATERPILLAR" EQUIPMENT—
Booklet—"Solving Pumping Problems With 'Caterpillar' Diesel Engines," Form 4148, discussing the solution of pumping problems with the use of "Caterpillar" Diesel engines;
Booklet — Form 4052, describing the mechanical features of "Caterpillar" Auto Patrols, and outlining the work they will do.
Caterpillar Tractor Company, Peoria, Ill.

MERCURY LIGHT—
Calendar—covering the last six months of 1937 and the first six months of 1938, illustrated, featuring the use of the "Engineered Mercury Light" for better light to fit the job.
General Electric Vapor Lamp Company, Hoboken, N. J.

ELECTRICAL STEEL SHEETS—
Booklet—"USS Electrical Steel Sheets," presenting latest factual information on this specialty product, introductory pages devoted to history of the development of electrical steel sheets and other pages featuring descriptions of modern mill technique in their production, etc.; publication released by Carnegie-Illinois Steel Corporation; copies from—
United States Steel Corporation Subsidiaries, P. O. Box 176, Pittsburgh, Pa.

JOHNS-MANVILLE PRODUCTS—
Brochure—"J-M Corrugated Transite," illustrated, discussing the subject of cutting maintenance costs on industrial roofing and siding, and how Corrugated Transite may be applied by the average workman;
Brochure — "How To Quiet The Noisy Office," illustrated, points to costly inefficiency caused by office din and explains how noise in offices may be reduced by the use of J-M sound absorbing materials;
Folder—"Lower Furnace Operating Costs With Johns-Manville JM-20 Insulating Brick," presenting drawings to show the application of this product to each of twelve different types of furnace.
Johns-Manville, 22 East 40th St., New York.

TENTACULAR DRIVE DATA—
Booklet—Presenting data on the Tentacular Transmission Belt for highly efficient power transmission.
Alexander Brothers, Inc., Philadelphia, Pa.

RESEARCH ILLUSTRATED—
Official Publication — Lubrication — Transmission Edition, in the interest of the Houghton Line of industrial oils and greases, leathers, etc., presenting interesting and informative articles on the subjects: "Into The Future," "Off With The Old, On With The New," "Are Plant Surveys Profitable," "Bearing Metals and Lubrication," "Modern 'V' Packings," "Shop Problems and Remedies."
E. F. Houghton & Co., Philadelphia, Pa.

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Modern Railroad Locomotives

THE Baltimore and Ohio Railroad exhibited at Atlantic City, during the 16th Annual Meeting of the Mechanical Division of the Association of American Railroads, its first 4-4-4-4 type, 4 cylinder, single unit, single expansion steam locomotive.

Alongside this new steam engine is the newest 3600 H. P. Diesel-electric streamliner to come off the production line of Electro-Motive Corporation, this being one of a number now on delivery to the B. & O. It is the locomotive which, on June 11, made the longest run ever made east of the Mississippi from Cincinnati to Washington. It completed the 551.4-mile trip in 12 hours, negotiating two ridges of the Alleghenies with ease and without making any attempt at a speed record.

The Diesel is 137 feet long, and weighs 570,600 pounds. The steam locomotive, with tender, is 117 feet long and weighs 736,500 pounds.

Named the "George H. Emerson," in honor of the present chief of motive power equipment of the B. & O., the new steam engine was completed on June 3 in the historic Mount Clare shops of the company in Baltimore from plans prepared by W. B. Whitsitt, assistant chief of motive power and equipment, and his staff.

The locomotive was designed for passenger service but can also be operated in high-speed freight service over the main line from Jersey City to Chicago or St. Louis. Since its completion on June 3, it has more than fulfilled operating expectations in road tests.

Outstanding of the improvements in the new No. 5600 steam locomotive is the Emerson water-tube boiler which enables the fire-box to develop the steam capacity needed for the four cylinders at 350 lbs. pressure. The superheater is of unique design and the valves are double-ported.

Besides these locomotives, the B. & O. is also displaying three of the thirteen experimental freight cars, made of the different types of alloys of iron, steel and aluminum, which it built in 1935 and have been in service since. These cars have not been prepared for exhibition, but have just been taken out of service so that those attending the meeting can examine their new construction features and the way the metal alloys used have resisted corrosion.

Two Latest Developments in Rail Motive Power for the Baltimore and Ohio Railroad
Left—First 4-4-4-4 type, 4-cylinder, single unit, single expansion steam locomotive ever built. Right—New 3600 H.P. Diesel Electric locomotive

Dividends and Earnings

DAVISON CHEMICAL CORPORATION—declared dividend of 60 cents a share on capital stock, payable June 18. First dividend since November, 1920. Fourth fertilizer company to take favorable dividend action recently. The others are International Agricultural, Virginia-Carolina Chemical and American Agricultural Chemical.

GEORGIA SOUTHERN AND FLORIDA RAILWAY COMPANY—showed a sharp recovery in earnings during the first four months of this year. Net operating income reached $156,652, an increase of 263 per cent over the corresponding period last year. Annual fixed charges $293,625 for the year.

MERCHANTS AND MINERS TRANSPORTATION COMPANY—declared quarterly dividend of 40 cents a share on capital stock, payable June 30th.

MOUNT VERNON-WOODBERRY MILLS — declared dividend of $3.50 a share on 7 per cent, cumulative preferred stock. A dividend of $2.50 a share was paid in June last year and $4.50 per share was distributed in December.

TODD SHIPYARDS CORPORATION—reports net income for fiscal year ended March 31, 1937 of $1,421,063 or $6.88 a common share. This compares with $787,304 or $3.81 a share in the preceding fiscal year.

CELOTEX CORPORATION—reports net income for six months ended April 30, 1937 of $715,931 or $2.39 a common share after preferred dividends. Net for the corresponding period of last year was $232,480 or 59 cents a common share. Company has two plants in Louisiana and one in Ohio.

THE SOUTHERN BELL TELEPHONE AND TELEGRAPH COMPANY—made a net income of $903,181.82 in North Carolina last year as compared with $939,234.63 in 1935. The company reported it paid a total of $789,223.15 in taxes last year or $8.69 on each of its 90,773 telephones. The firm's property in North Carolina was valued at $19,267,300.

MARYLAND CASUALTY COMPANY—filed balance sheet with insurance authorities showing total assets of $40,437,830 on March 31, 1937, as against $37,129,760 on March 31, 1936. Surplus increased $1,338,464, standing at $4,970,605.

WESTERN ELECTRIC COMPANY—declared a dividend of 75 cents a share on common stock, payable June 30th, an increase from 60 cents a share paid March 31st, this year.

GENERAL TIRE & RUBBER COMPANY—authorized issuance of 64,397 additional shares of the company's common stock to present stockholders, rights providing for the purchase of one share for every seven shares already held, at the price of $20. a share.

THE COMMONWEALTH & SOUTHERN CORPORATION — Consolidated gross revenues for the year ended May 31, 1937, of $142,045,959, as compared with $126,907,351 for the preceding twelve months. Net income after deducting operating expenses, taxes, interest and other fixed charges, and provision for retirement reserves was $15,420,378. Equivalent to $10.28 per share on the outstanding Preferred Stock $6 Series of the Commonwealth and Southern Corporation, comparing with $6.90 per share for the twelve months ended May 31, 1936.

ARUNDEL CORPORATION — declared extra dividend of 25 cents a share in addition to the regular quarterly dividend of 25 cents a share, both payable July 1st. First extra dividend since 1932. Net profit for 5 months ending May 21st, exclusive of Federal taxes was $415,878.68, an increase over the corresponding period a year ago of $380,180.38.

NORFOLK AND WESTERN RAILWAY—shows net income for 5 months ended May 31, of $13,073,723, after charges and taxes, equal, after dividends on the 4 per cent preferred stock, to $9.02 a share on the common.

HOUSTON OIL COMPANY OF TEXAS—estimates earnings for the first half of this year at approximately $920,000, equivalent to more than $2.50 a share on 6 per cent preferred stock.

SEABOARD AIR LINE RAILWAY— redemption of $1,500,000 of receivers certificates as of August 1st has been authorized by Judge L. B. Way at Norfolk. This is the second redemption since April.

LOUISVILLE AND NASHVILLE RAILROAD — reports net income for the 4 months ended April 30th, last, of $2,426,286, after taxes and charges. Equal to $2.07 a share on 1,170,000 shares of capital stock.

UNITED STATES PIPE & FOUNDRY COMPANY—probably will report for the 6 months ended June 30th, net income of 10% or more above the $1,199,239 earned in the first half of 1936. This would amount to about $1.90 a share on the outstanding common.

VIRGINIA PUBLIC SERVICE COMPANY—reports net income for the year ended December 31, 1936 of $966,441 after depreciation, federal income taxes, interest, amortization, etc. Equal to 46 cents a share on common stock after dividends on preferred.

JONES & LAUGHLIN STEEL CORPORATION AND SUBSIDIARIES—show net profit of $7,619,668 after depreciation, interest, federal income taxes, etc. for 12 months ended April 30, 1937. Surtax on undistributed profits not deducted.

REPUBLIC STEEL CORPORATION — declared dividend of $1.50 per share on the 6% Cumulative Convertible Prior Preference Stock, Series A, payable July 1, 1937 to stockholders of record June 12, 1937. Dividend of $1.50 has also been declared on the 6% Cumulative Convertible Preferred Stock, payable July 1, 1937, to stockholders of record June 12, 1937.

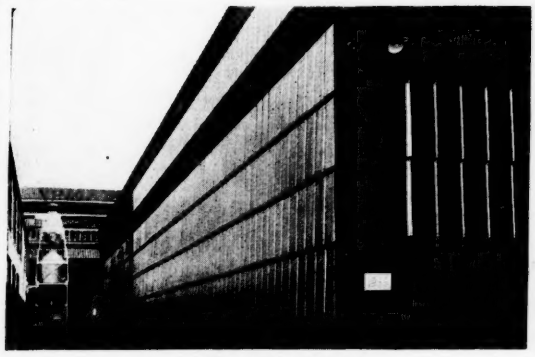
ALABAMA POWER COMPANY — declared regular quarterly dividends on its preferred stock, payable July 1, 1937, on the $7 and $6 stock to stockholders of record June 12, 1937, and payable August 2, 1937, on the $5 stock to stockholders of record July 15, 1937. These dividends total approximately $585,000.

Texas Manufacturers' Association

In its seventeenth annual convention held at San Antonio June 16, the Texas State Manufacturers' Association re-elected its principal officers headed by Albert T. Clifton of Waco, president. Porter A. Whaley, San Antonio, continues as executive vice president and general manager. F. M. Burkhead, Houston, and H. N. Bodkin, Denison, were re-elected first and second vice presidents, respectively. Additional vice presidents were elected as follows: S. Maston Nixon, Corpus Christi; R. G. Allen, Pampa; W. C. Trout, Lufkin; C. H. Boice, Waco; Arthur Temple, Texarkana; Charles Baldus, San Antonio; W. F. Gohlke, Austin; J. B. O'Hara, Dallas; H. G. Parr, Fort Worth, and J. E. Rittersbacher, Corsicana. A large number of directors were chosen.

The Association elected a new industries committee under the chairmanship of W. E. Dickerson, Corpus Christi, with E. J. Price, Dallas, secretary. This committee will contact Eastern and Northern industries seeking new locations. It will seek the cooperation of state agencies in assembling data on Texas' raw materials and chemurgic possibilities, and cities seeking particular industries. The Black-Connery measure which prescribes $16 minimum pay with 40 hours maximum work week was assailed at the convention as a blow to Southern industry.

HOUSTON—
Magazine—for June, 1937, by the Houston Chamber of Commerce, featured cotton, with articles: Foreign Trade and Cotton by Lamar Fleming, Jr.; Cotton the Pioneer Industry by L. R. C. Towles; Improving Texas Cotton by Alston Clapp, Jr.; Early Day Memories by Jesse Ziegler; Cotton and the Port by R. D. Ernst; Cotton Culture in 1855 by J. T. Thorpe.
Houston Chamber of Commerce, Houston, Tex.



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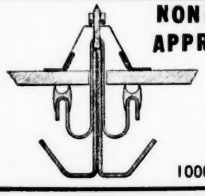

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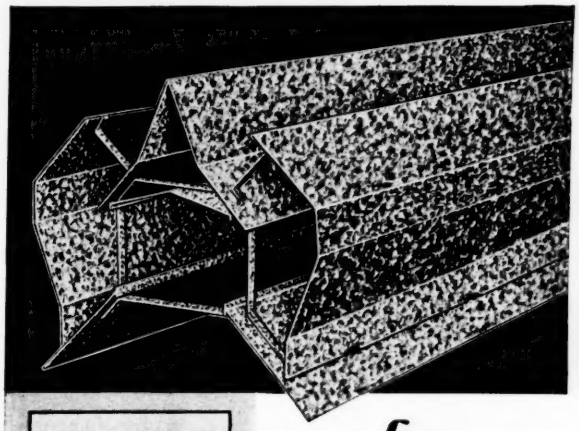

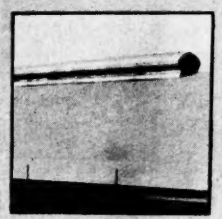

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THE *ORIGINAL* CONTINUOUS VENTILATOR

Louisiana Recognizes Its Opportunity

(*Continued from page 32*)

ful completion of the cattle-fever tick eradication program which brought about the establishment of a rapidly growing livestock industry. Three were attracted by the state's vast salt deposits which they will convert into commercial chemicals. One is a plant to extract tung oil and cottonseed oil and to manufacture fertilizer. Five are outgrowths of Louisiana's increasing importance as a petroleum producing center, another depends on its vast lumber supply, and the last manufactures gases for use in industry.

WHAT is important about this is that nearly every one will form the nucleus for other plants which will either process by-products, supply equipment, distribute their goods, or otherwise depend on the presence of these initial factories for their own existence. For instance, the meat-packing plant might well justify the building of tanneries, soap plants, gelatine factories, and chemical manufactories as well as cooperage plants, box manufacturing establishments, machine shops and the like. In other words, we are trying, as far as possible, to bring into Louisiana the basic industries and through them attract the smaller ones which serve them.

Building on Sound Foundation

WE in Louisiana believe we are proceeding on a sound and businesslike basis, attracting manufacturers and industrialists whose factories have a definite place in the state either from the standpoint of raw materials or markets, or both. The state is seeking enterprises of a permanent nature, of a sound business reputation, and in a wide enough variety so that the industrial empire we are attempting to build will not be shaken by economic storm in any one industry.

We Louisianans believe that our state is outstandingly suited to a program of industrial expansion, and we know that with the current trend toward de-centralization of industry we have an extraordinary opportunity to capitalize on the multitude of natural advantages which our state possesses. The late Arthur D. Little, noted chemist of Cambridge, Mass., once wrote, **"Nowhere is there likely to be a greater extension of industrial activities than in the South. . . . Nowhere in the world is there greater opportunity for the development of chemical industry than in Louisiana where salt, sulphur, oil and gas occur in close proximity."** Recent developments bear out this opinion.

Rapid Progress

WITHIN the past two years Louisiana has jumped from sixth to fourth ranking among the petroleum-producing states and much of the territory is still unexplored and undeveloped. Louisiana's salt mines, at the present rate of production, will last for 333,000 years, according to a reliable estimate. Sulphur, one of industry's greatest sinews, underlies many of our salt domes, and the state ranks second only to Texas in the production of this invaluable mineral. A cheap and super-efficient fuel, natural gas, is available throughout the state at exceptionally low industrial rates.

As a result of this fortuitous combination of natural resources, and of our own announced program, "big industry" is showing an increasing interest in Louisiana. The South's first alkali plants—the Solvay Process Company at Baton Rouge and the Mathieson Alkali Works at Lake Charles—by providing a plentiful and cheap supply of caustic soda, chlorine, and light and dense soda ash, have speeded the development of the Louisiana oil refining industry and are paving the way for the introduction of glass factories and soap works, in each of which these chemicals are vitally important.

Canning and preserving of Louisiana's fish, shrimp, oysters, frogs, crab-meat, fruits, and farm products is showing steady gains and two of the industries granted tax exemptions were canneries. Louisiana is already leading the South in the production of kraft paper from pine trees and it is hoped that before long a Louisiana newsprint mill will be obtaining some of the orders that are now going to foreign producers of newsprint.

Backed by Ample Resources and Assurances of Fair Treatment

FROM every viewpoint—climate, transportation, markets, raw materials, labor supply, and facilities—Louisiana is the logical place for the establishment of industries on a broad scale.

Its climate is semi-tropical and permits savings in construction, maintenance and fuel.

It has a labor supply, high-grade and intelligent, of 95 per cent native American stock.

A 4,700-mile system of navigable streams places within the reach of practically every community the benefits of cheap water transportation.

The seaports of Louisiana pour out a ceaseless flow of products from the Mississippi valley to foreign and American seaboard markets.

Nine main trunk railroad lines crisscross the state and afford every section swift rail transportation.

Air service to both seaboard and the middle west is the finest obtainable and our 14,000-odd miles of modern highways represent one of the greatest road systems in the South.

Potentially one of the Union's richest states, Louisiana stands on the threshold of a period of industrial development unsurpassed in its history. Through proper promotion, the extending of a cordial welcome to industry, and the assurance of fair and just treatment we hope to speed this development and bring our people and our state an ever-increasing prosperity and a new high standard of living.

Steam Power Plant Saving

(*Continued from page 30*)

steam flow it is possible to compare the two records easily and to determine when a rise in flue gas temperature indicates trouble or when it simply indicates an increase in the rate of steaming of the boiler.

The following benefits and savings have been noted in plants operating boilers by the steam flow-air flow system.

1. Fuel costs have been reduced—by guiding operators in the regulation of fuel and air, boiler meters improve combustion and heat absorption efficiency, thereby effecting large savings in fuel costs.
2. Maintenance and outage have been lessened—by accurate control of excess air, safe uniform furnace temperatures have been obtained, which permit high combustion efficiency without excessive refractory deterioration, thereby reducing boiler outage and furnace maintenance cost.
3. Standby costs have been lowered. Increased capacity per boiler has reduced the number of units which must be carried on bank to meet peak loads. Meter guidance also results in much more economical operation of boilers when on bank.
4. More economical operation of auxiliaries.—less current or steam is used by auxiliaries to handle the decreased air and fuel required for a given steam output.
5. Added capacity has been secured without additional fixed charges—increased steaming capacity secured on existing equipment.

The practice of operating "blind" without the aid of meters to guide fireman, results in serious losses. This has been repeatedly demonstrated by consulting engineers in their tests of power plant performance.

PLASTIC MOLDING—

Booklet—"The Story of Plastic Molding," illustrated, briefly describing conventional mold-making, molding methods, and the more generally used plastic materials. **Chicago Molded Products Corporation,** 2145-58 Walnut Street, Chicago, Ill.

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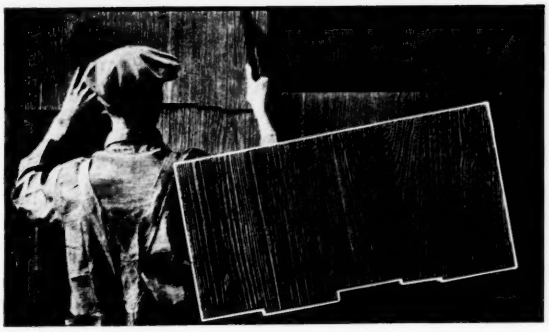

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When these siding shingles are applied over weather-worn walls, you have another money-saving advantage. The dead air space between provides effective insulation, reducing fuel costs and providing new comforts for your employees. It will pay you to investigate. Write for folders. Address Dept. M. R. 7-37

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Northern Hard Rock Maple Flooring

BLOCK **Holt Hardwood Co., Oconto, Wis.** STRIP

MEMBERS OF MAPLE FLOORING MANUFACTURERS ASSOCIATION

Coastal Plains Area of Georgia

(*Continued from page 35*)

crop is shipped largely to processing plants in the North and East. There are at present a few plants in the South making peanut butter and candy.

A process for making starch and industrial alcohol from sweet potatoes has been perfected by the U. S. Department of Agriculture and the deep South, the home of the sweet potato, offers excellent opportunities for plants of this type. Only one starch plant is in existence, located at Laurel, Miss. It is said 150 such plants will be required to supply the domestic demand.

Tobacco is another large cash crop grown in the Southeast. This crop is partially processed before shipment to the cigarette factories. At several points along the Georgia & Florida rails are located re-drying and stemming plants. A considerable expansion in tobacco manufacture is contemplated.

Demand for creosoted timber products is increasing. Contractors building rural electrification lines have encountered difficulty in securing creosoted poles. Industries supplying these products have been expanding.

Rapid development of the textile industry, woodpulp and paper making plants as well as food processing industries has stimulated the development of the iron and steel industry. In the Birmingham area the U. S. Steel Corporation through its subsidiary, the Tennessee Coal, Iron & Railroad Co., are now investing millions of dollars in plant improvement and the Republic Steel Co., of Cleveland, Ohio, which recently acquired the Gulf States Steel Co., contemplates improvements in Alabama, to providing facilities for increased production in anticipation of still greater demands caused by the agricultural and industrial expansion of the Southeast. With the supply of iron and steel available there will be established in this section within the next few years, many small plants producing articles of iron and steel which are in every day use. A few years ago it was thought by some business leaders in this section that the deep South was essentially an agricultural country and that we would never see factories here and especially in the coastal plains area. Not only have we many textile and hosiery mills, food processing plants, garment factories, etc., but foundries and machine shops. One foundry in Moultrie has been casting plow points exclusively the past two years, another is now being built to cast soil pipe and a machine shop turning out peanut picking machines. Another south Georgia plant is making industrial type locomotives.

The possibilities for development in the Southeast are practically unlimited. Numbers of counties are building rural electric transmission lines. This county (Colquitt) is now investing a half million dollars to make electricity available to every farm home in the county and the edges of five adjoining counties. Aside from improving farm living-conditions these projects will create demand for every kind of an electrical device, from percolators to pumps.

Southern Farm Land in Demand

(*Continued from page 34*)

in the South, while smaller than that of commercial banks and possibly smaller than the cash loans of individuals, is nevertheless becoming a very substantial factor in the total cash financing of Southern crops and livestock production.

Subsidized Interest Threatens Cooperative Credit

The greatest single peril to the continued existence and development of the cooperative farm credit system, is the desire for very low mortgage rates of interest which may be had only through continued subsidies. The farmers of America have built the greatest cooperative credit system in the world and it is based upon offering sound securities represented by farm mortgages to the investing public—the rates of interest paid by the farmers reflecting the quality of the security offered investors.

Permanent Interest Subsidies for Farmers Means:

1. **Demand for similar treatment by home owners and other groups.**
2. **Unwise concentration of credit in the subsidized agency.**
3. **Destruction of the cooperative features of the Federal land bank system.**
4. **Tendency to increase the violence of land booms.**

The burden of interest on farm mortgages is not shown by the rate of interest alone but by the relation which interest rates bear to the prices of farm commodities. In 1932 it required nearly double the quantity of farm products to pay interest compared with payments in pre-war days. Last year it required only one-fourth as much as in 1932 and only half of pre-war payments to pay interest on a Federal land bank loan refinanced at 5 per cent per annum with the temporary rate of 3½ per cent.

Subsidized interest is not a substitute for fair prices for farm commodities nor is it a cure for drought. The average annual installment on a Federal land bank mortgage is $235. A reduction in interest of ½ of one per cent on the average loan would only amount to about $16. It should not take an undue amount of courage to taper off the subsidized interest rate and within a reasonable time to place interest rates on a purely business basis which is the aim sought in a cooperative farm credit system.

The Farm Credit Administration can give and is giving credit equality to agriculture. Interest rates on Federal land bank bonds and Federal intermediate credit bank debentures now are as low or lower than the rates on securities of the strongest corporations. Under present conditions in the United States a 3 per cent mortgage rate can't be had without costing somebody something—the borrower or the Government. The Federal land banks for more than a year have been making new loans and charging at the rate of only 4 per cent per annum which is within ½ of one per cent of the subsidized interest rate in effect during the last two years. The Farm Credit Administration will make loans at the low - est possible interest rate on a business basis and make them at all times.

It is up to the farmers to choose whether they are to have a permanently subsidized interest rate or a cooperative credit system. They can't have both, for the two will not mix any better than oil and water.

It is possible to get too much credit. Farmers are more likely to over borrow in times of rising commodity and farm prices than during depressions. The Federal land banks courageously loaned on the appraised normal value of the properties during the depression. They should continue to adhere to that basis of appraisal during more prosperous times. The land banks do a sufficiently large business to be important factors in the farm mortgage field and if they do not follow upward advancing prices in farm lands and lend on a different and higher basis than in the past few years, they will be a much needed stabilizing influence in the farm mortgage field.

The boom of 1918-20 is still being liquidated and farmers who wish to borrow on other than normal value of appraisals should keep in mind those boom days and the headaches which followed. A reasonably stabilized fair farm price level is the most important single factor in the operations of a mortgage credit system.

The Farm Credit Administration, for the past year and more since the emergency period passed, has been concentrating upon operating problems, introducing more business efficiency, education, decentralization and coordination of operations, and continuity of management.

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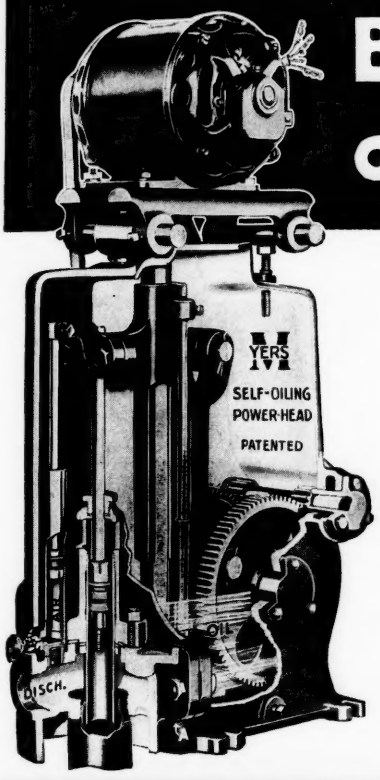

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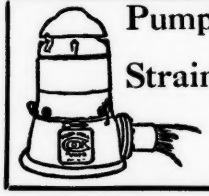

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Cellulose from Cotton

(*Continued from page* 33)

converted most of the mixed lint, stalk, and cusp to alpha-cellulose. The total cellulose and alpha-cellulose recovery has been surprising and the latter approaching the recoveries obtained by Macormac. A well known production of pulp from straw, by a plant in the Argentine, using chlorine under pressure, supports an anticipation that a further study now under way will show chlorine to be a good pulping agent with whole cotton. A comparison of all known pulping procedures is progressing.

It has been shown that extraction of the oil from whole cotton will yield more than can be obtained by pressing an equivalent weight of seeds alone, and from the extract a merchantable oil can be recovered. The extracted residue is in admirable shape for pulping. But different solvents act quite differently towards the extractable substances in the cotton: the oils, the waxes, and the coloring matter. Larger sized experiments are planned from which it is expected definite conclusions will be drawn as to the most efficient or most practicable solvents for this purpose. The small scale trials so far made must be regarded as exploratory only. In general, what is now needed is a financial support which would permit putting to work two or three competent men, with adequate equipment to test and follow up what has already been done on the gram scale, with trials on the hundred pound scale. Certainly large enough products for practical tests by interested industrialists would thus be possible.

Advance in the field work has been slow. However, this year plots have been planted for us by the North Carolina State Experiment Station at Rocky Mount, Raleigh, and Statesville. The South Carolina State Experiment Station is growing plots for us at the Pee Dee Station, near Florence, S. C., and the Dockery Farms, near Rockingham, N. C., is growing plots, while some observations will be made for us at the Coker farms near Hartsville, S. C. We will have results from a number of soil types, some 4 or 5 varieties of cotton, and of course from several contrasting cultural treatments. It is anticipated that reliable yield and cost figures will become available. At present, the ideal individual plant would have apparently a thin but strong stem, thin walled cusps, and a very full lint mass about large plump seeds. We have approached this, under certain cultural conditions, with one variety of cotton. But it is not certain that, for the dollar expended, this plant would give the highest yield in money return for the cellulose and oil recovered.

Undoubtedly, progress has been made in the investigation. Its practicability is increasingly promising and it is reasonable to expect that it will soon reach the point where consideration can no longer be avoided by the cellulose industries.

More Industries for the South

(*Continued from page* 37)

Barton R. Biever, Montgomery, Ala., paper box plant	150,000
Bryon Jackson Co., Houston, Tex., oil tool plant	500,000
Burlington Mills, Inc., Burlington, N. C., expansion	1,575,000
Carolina Fuel & Transportation Co., Sanford, N. C., coal mines	200,000
Coca Cola Co., Dallas, Tex., plant	800,000
W. B. Cole and Associates, Rockingham, N. C., hosiery mill	150,000
Combustion Engineering Co., Chattanooga, Tenn., boiler plant	175,000
Compressed Industrial Gases, Inc., Shreveport, La., plant	150,000
Continental Can Co., New Orleans, La., addition	250,000
Continental Coal Co., Fairmont, W. Va., coal washing plant	150,000
Continental Oil Co., Lake Charles, La., gasoline plant	100,000
Cortex Petroleum Corp., Palestine, Tex., gasoline plant	100,000
Crown Can Co., St. Louis, Mo., plant	3,500,000
Dixon Packing Co., Houston, Tex., plant	150,000
Drexel Furniture Co., Marion, N. C., plant	100,000
Edgewood Shoe Factories, Atlanta, Ga., plant	150,000
Evans Metal Co., Atlanta, Ga., lead plant	100,000
Ferrum Veneer Corp., Inc., Ferrum, Va., building	100,000
Glidden Paint Co., Valdosta, Ga., plant	200,000
Gray & Dudley, Nashville, Tenn., stove plant	400,000
Greene Brothers Lumber Co., Inc., Elizabethtown, N. C., saw mill, kilns	125,000
Gulf Portland Cement Co., Houston, Tex., plant	400,000
Houston Chronicle, Houston, Tex., building	750,000
Houston Milling Co., Houston, Tex., feed mill	126,000
Humble Oil & Refining Co., Houston, Tex., gas pipeline	2,000,000
Iberia Sugar Co-Operative Assn., New Iberia, La., mill	700,000
International Harvester Co., New Orleans, building	120,000
Jackson County Mills, Pascagoula, Miss., woolen mill	150,000
James River Potteries Co., Hopewell, Va., modernization	100,000
Ken-Rad Tube & Lamp Co., Owensboro, Ky., factory	200,000
LaFourche Sugars Corp., Thibodaux, La., modernization	265,000
Lane Co., Alta Vista, Va.	100,000
Lone Star Cement Corp., Houston, Tex., enlargement	200,000
Lydia Cotton Mills, Clinton, S. C., enlargement	250,000
Marshall Field & Co., Spray, N. C., expansion	263,000
Glenn L. Martin Co., Baltimore, aircraft plant extension	2,000,000
Memphis Natural Gas Co., Lula, Miss., booster station	200,000
W. F. Mitchell and Associates, Bryson, Tex., gasoline	150,000
Monongahela West Penn Public Service Co., Clarksburg, W. Va., improvement	115,000
Phillip Morris & Co., Ltd., Richmond, Va., tobacco plant	700,000
National Can Co., Baltimore, Md., plant	150,000
National Container Corp., Jacksonville, Fla., paper mill	3,275,000
National Oil Products Co., Cedartown, Ga., tank farm	1,000,000
National Tire and Rubber Co., Elizabethton, Tenn., plant	225,000
Newport Co., DeQuincy, La., retort	100,000
Norfolk and Western Railway, Roanoke, Va., cars	1,600,000
Ozark Corporation, Mobile, Ala., buildings	200,000
Panhandle-Eastern Pipe Line Co., Texas, pipeline	4,500,000
Potomac Edison Co., Cumberland, Md., power plant	3,000,000
Pure Oil Co., Smith's Bluff, Tex., refinery addition	2,125,000
Pursglove Coal Mining Co., Fairmont, W. Va., cleaning plant	100,000
Ragan Spinning Co., Greensboro, N. C., expansion	150,000
Riverside and Dan River Cotton Mills, Danville, Va., additions	100,000
Sellars Hosiery Mills, Burlington, N. C., hosiery mill	150,000
Sheffield Steel Co., Kansas City, Mo., expansion	2,000,000
Shell Pipe Line Co., Dallas, Tex., Texas pipeline	500,000
Sinclair Refining Co., Portland, Tex., refinery	1,000,000
Socony Paint Products Co., Beaumont, Tex., expansion	100,000
Socony-Vacuum Oil Company, Inc., St. Louis, Mo., cracking plant	200,000
Solvay Process Co., Baton Rouge, La., chlorine plant	1,000,000
Sonoco Products Co., Hartsville, S. C., paper plant	500,000
Southern Kraft Corp., Spring Hill, La., paper plant	6,000,000
Southland Paper Mills, Inc., Tex., newsprint mill	5,000,000
Standard Oil Co., Baton Rouge, La., lubricating oil plant	2,700,000
Sunray Oil Co., Allen, Okla., cracking unit	140,000
Swift and Co., Lake Charles, La., plant	750,000
Talco Asphalt & Refining Co., Mt. Pleasant, Tex., refinery	600,000
W. Nat Terry and associates, Danville, Va., tobacco warehouse	100,000
Texas-Empire Pipe Line, Oklahoma City, Okla., enlargements	850,000
Tips Glass Co., Houston, Tex., glass container plant	500,000
Weirton Steel Co., Weirton, W. Va., recreation center	250,000
West Point Manufacturing Co., Riverview, Ala., conversion	150,000

The South Speeds Up Its Freight

(*Continued from page* 31)

spread widely over the South and the nation.

THE splendid record of "on time" performance of freight trains attests in no uncertain terms to the dependability of schedules. A large Southern road, for instance, points with pardonable pride to the fact that 58,449 of the 59,642 package cars handled out of a major terminal in one year reached their destinations on time.

Although the average service is up, the average charge is down. As a partial offset to the decline in average revenues, the railroads have achieved notable advances in operating efficiency. The amount of coal used 15 years ago in the freight service of Class 1 lines to move 1,000 tons of goods and equipment one mile was 163 pounds. Only 120 pounds of fuel were required in 1935, or a saving of 26 per cent under 1922. Class 1 railroads paid out $48,084,955 in 1922 for loss and damage to freight in transit, while, in 1935, this item was cut to $17,350,902. Is is only by such economies that the rail carriers, in the words of the Association of American Railroads, can "haul a ton of freight a mile with a glass of water and less than a handful of fuel, and at rates averaging less than a cent."

The tremendous strides made in recent years by the Southern lines and those generally throughout the country in improving the freight service are barely the beginning. Freight train developments have not had the stop signal flashed against them and never will. With a clear track ahead and the throttle wide open, further and, perhaps, more spectacular advances can be expected, of the roads in this region.

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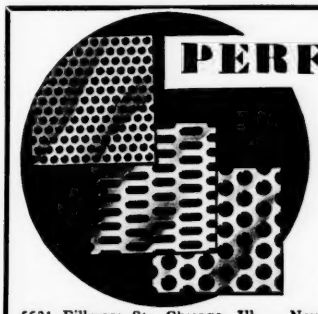

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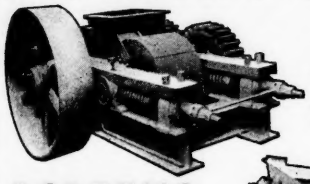

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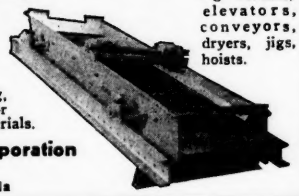

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Industrial Relations Problems to Be Aired at Executives Meet

"Industrial Relations, a National Problem," will be the theme of the annual conference of Southern industrial executives meeting at the Grove Park Inn, Asheville, N. C., on July 15.

The Executives group will hear James O. McKinsey, chairman of the board of Marshall Field Company; John L Perry, of Birmingham, president of Tennessee Coal, Iron and Railroad Company; and Homer L. Ferguson, president of the Newport News Shipbuilding and Dry Dock Company. Robert R. West, president of the Riverside and Dan River Cotton Mills, and chairman of the program committee of the executives conference will preside over the sessions which will be concerned with topics including "Industrial Relations, a Major Responsibility of Executives," and "the Attitude of Southern Industrial Executives Toward Current Industrial Relations Problems."

Personals

LAWRENCE WOOD ROBERT, JR.—President of Robert and Co., Engineers, Atlanta and Washington, and former Assistant Secretary of the Treasury, has been appointed industrial consultant to the Southeastern Governors' Conference for the purpose of coordinating objectives of the group, particularly with reference to a revision of Southern freight rates. Governor Bibb Graves of Alabama is chairman of the Conference.

DONALD C. BAKEWELL — resigned as vice president and chairman of the executive committe of Continental Roll and Steel Foundry Company to become special representative of the Blaw-Knox Company, Pittsburgh, Pa.; is vice president and member of the executive committee of Illinois Zinc Company, director of E. H. Jennings Bros. Company, and is connected with other industrial firms and organizations.

L. T. MCGUIRE—recently joined the Harnischfeger Corporation of Milwaukee, Wis., as Divisional Manager of the Excavator Division, with a background of 18 years with Byers Machinery Company of Ravenna, Ohio.

CRANFILL AND FREY—have been appointed representatives and distributors of Carrier air-conditioning equipment in Lexington, Ky., and Central Kentucky, with offices at 174 Sherman Avenue, Lexington.

J. J. SUMMERSBY—has been appointed General Sales Manager of Worthington Pump and Machinery Corporation, Harrison, N. J., extending his responsibilities as Assistant Vice President. He joined the corporation in 1920 as sales engineer and has been continuously identified with it since that time, serving as district sales manager, divisional sales manager, and assistant general sales manager.

JOHN O. SMITH—recently appointed Acting Chief, Marketing Division, National Bituminous Coal Commission, Washington, D. C.; served for four years as member of the Marketing Division, Appalachian Coals, Inc., Cincinnati, Ohio, and for twenty years was associated with Southern Railway System.

HAROLD KNAPP—general sales manager of The Celotex Corporation, Chicago, has been elected vice president and general sales manager of the company.

DR. CHARLES HOLMES HERTY—director of the Savannah Pulp asd Paper Laboratory, was recently awarded an honorary degree of Doctor of Science by the University of Florida.

B. C. HEACOCK—president Caterpillar Tractor Company, Ill.; WILLIAM C. DICKERMAN, president, American Locomotive Company, New York; CHARLES E. BOCKUS, president, Clinchfield Coal Corporation, New York; R. E. CAMPBELL, general manager, Miller and Paine, Lincoln, Neb.; representing domestic distribution; JAMES W. SPANGLER, vice president, Seattle First National Bank, Seattle, Wash. (representing foreign commerce)—elected by Board of Directors of the Chamber of Commerce of the United States, Washington, D. C., to fill vacancies on the board.

LOUIS B. NEUMILLER—former manager of central sales division of Caterpiller Tractor Company, Peoria,, Ill., has been named Director of Industrial Relations for the company, a new post; LEONARD J. FLETCHER, former head of the Agricultural Sales Division, has been named Assistant General Sales Manager; C. M. BURDETTE, former assistant to Mr. Neumiller, has been advanced to manager of the central sales division; CHARLES A. SPEARS, supervisor of special representatives, has been promoted to manager of allied equipment sales; MERWIN T. FARLEY, eastern agricultural sales supervisor, has been named agricultural sales manager of the Eastern Division, and FLOYD E. RUSHER, agricultural sales manager of the eastern division, has been promoted to assistant sales manager of the Central Division, succeeding Mr. Burdette.

HARVEY C. COUCH—recently elected chairman of the board of Kansas City Southern Railway, assured the Interstate Commerce Commission in Washington that he has no desire to form a "far-flung railroad empire." This statement was made while testifying in support of the application of the Louisiana & Arkansas Railway to acquire the Rock Island, Arkansas & Louisiana, which is now a part of the Rock Island System. Mr. Couch, who owns a substantial interest in Louisiana & Arkansas,, was formerly its chairman.

ROBERT W. LEA—has bees elected president of the West Virginia Coal and Coke Company, New York, N. Y., succeeding John C. Cosgrove, who resigned.

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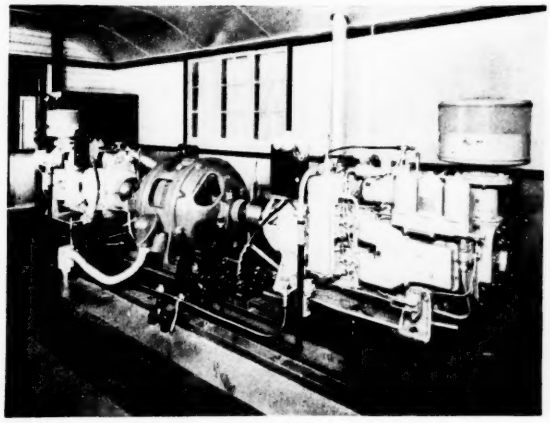
"The balance of load between the various cylinders, as shown by exhaust temperature pyrometer—regardless of whether both engines are driving the generator or only one, is especially good. With one engine running the exhaust temperatures taken showed 410°, 410°, 412°, 408°, for the four cylinders, an absolutely equal balance of power between the cylinders."



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Alabama State Chamber of Commerce

ALABAMA has made a forward step in organizing a State Chamber of Commerce. It is receiving wholehearted support throughout the state. President Benjamin Russell, president of the Russell Manufacturing Co., Alexander City, in discussing the movement said that "its broad objective is to increase the income and buying power of the more than 50 per cent of our population engaged in agriculture."

The executive committee of the Association is composed of Thomas W. Martin, president Alabama Power Co.; J. L. Perry, president Tennessee Coal, Iron and Railroad Co., both of Birmingham, E. F. Ladd, Mobile, and G. Arthur Cook, Montgomery.

Among vice presidents named are: Mark Lyons and Daniel A. Dunlap, Mobile; Floyd McGowin, Chapman; Wallace D. Malone, Dothan; Harry Ayers, Anniston; Gordon Palmer, Tuscaloosa; J. S. Whitmire, Oneonta; Barrett Shelton, Decatur; Algernon Blair, Montgomery; and Karl Landgrebe, Donald Comer, and J. C. Hodges of Birmingham.

Dr. H. G. Dowling of Tuscaloosa was appointed temporary manager. Montgomery has been selected as the headquarters of the Association and branch offices are to be established throughout the state.

"Man In A Chemical World"—This volume of 292 pages has been prepared for the "service of the chemical industry" by A. Cressy Morrison, Chairman, Finance Committee of American Chemical Industries Tercentenary Committee, New York City. It presents an interesting and informative account of activities of the chemical industry in converting discoveries of science into every-day necessities, and is the final act of the Chemical Industries Tercentenary Committee in completing the celebration of three centuries of constructive achievement by chemical industries in America. The publication is from the press of Charles Scribner's Sons, New York, and is priced at $3.00.

PROTECTING HEALTH OF WELDERS—Booklet — titled "Health Protection of Welders," presenting a compilation of present-day information on health hazards connected with welding operations.
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Belton Chamber of Commerce

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